Extrasensory Ecology:

Parapsychology and Anthropology

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FOREWORD

At the 1973 annual meeting of the American Anthropological Association in New Orleans I presented my first paper on parapsychology as it related to anthropology. As an unusual topic which did not easily fit into any of the established sections, it was presented in a special session. Dr. Thomas W. Maretzki, professor of anthropology at the University of Hawaii, Honolulu, and a distinguished leader in the fields of psychological anthropology and medical anthropology, kindly agreed to chair this mixed session and to act as discussant. Upon reading my abstract for the paper, he wrote me a long letter of instruction which, inter alia, revealed great fear of the topic and anxiety about the statements I might make. Following my presentation of the paper a week later he expressed a profound fascination for the subject and interest in the intensive documentation which had accompanied the paper. This was followed by dinner, drinks, and endless discussion. The latter provided the by-that-time much needed encouragement required to set me to work on organizing this volume.

The first step was to organize the Rhine-Swanton Interdisciplinary Symposium on Parapsychology and Anthropology for the 1974 annual meeting of the Association in Mexico City, using the impetus from my 1973 paper as a starting point. I shall forever be indebted to a variety of prominent persons from anthropology as well as engineering (Beal), psychology (Van de Castle), psychiatry (Eisenbud), and physics (Walker and Wolkowski) for their great expenditure of time and money to make this a success. The end result was an interdisciplinary grouping of symposiasts the likes of which has seldom been assembled for these annual meetings of anthropologists. Despite the major break which a symposium of this type represented for traditional anthropology, the program chairman, Dr. James Officer, chose to provide a major slot and meeting room for its presentation. "We couldn't have called ourselves a science and come to any other decision," Officer later said. Although I confess to some bias, it seems safe to say that in terms of attendance and interest this was perhaps the most successful symposium I had observed in a decade of attending American Anthropological Association meetings. It introduced anthropologists to a broad spectrum of other fields and unfamiliar research--quite aside from the strictly paranormal aspects. And it provided the necessary communications network for obtaining most of the chapters of this book.

As far as I was concerned as an editor, the symposium identified those persons who could best present parapsychological information within a scientific framework. Further, it clarified what sorts of planning, research designs, and data would be required to bring parapsychological materials into the mainstream of anthropology. Most of all, it emphasized the need to consider the extrasensory phenomena within a cultural framework, because the *form* such phenomena assume is *cultural*. Cross-cultural evidence suggests that the occurrences of ghosts, astral projections, and poltergeists are real, but that such events assume their particular forms by virtue of the special cultural contexts in which they occur. Hence, except for Walker's work in physics, the matter is not very clear as to which extrasensory events are *singular* physical phenomena and which represent a *conglomeration* of phenomena pulled together in some way meaningful for a particular culture. What is clear is that the extrasensory experience is a frequent if not omnipresent aspect of *all* cultures.

It thus gives me great pleasure to present here a comprehensive selection of some of the most recent interpretations and research observations about parapsychology and anthropology. I owe a great debt especially to those distinguished and solidly established anthropologists who have either contributed to this volume or strongly encouraged my assembling and publishing this collection. While one would hope to see the research reports here completely superseded by a flurry of new research in the next decade, the present volume does provide a first general outline--similar to Bourguignon's work on trance a decade ago--of significant new directions for the anthropology of the future.

PREFACE

It is tempting to say that the field or discipline variously described as parapsychology-and-anthropology, extrasensory ecology, anomalistics, or simply "paranthropology" is in its infancy and therefore that this collection represents the first "crack in the cosmic egg" (to borrow a metaphor from Joseph C. Pearce). Insofar as the contributors here are generally more sophisticated in the vast recent literature of parapsychological research than were earlier anthropologists, that is true. But we may not overlook the great debt we owe to the real vanguard represented by Andrew Lang, Victor Barnouw, Waldemar Bogoras, George Devereux, Geoffrey Gorer, A. Irving Hallowell, John Honigmann, Solon Kimball, Weston La Barre, Lucien Lévy-Bruhl, Ralph Linton, Robert Lowie, Margaret Mead, Laura Thompson, and C. W. Weiant. Some of these pioneers devoted major segments of their lives and several hundred pages of published work to the paranormal; others merely spoke out in support of research on the topic, albeit at some risk to their professional reputations. Carlos Castaneda, with whom some of us disagree so vehemently, also contributed a great share to the present interest, at least in terms of popularization.

As to my personal debts, I must mention at the least Frank Essene, Marion Pearsall, John Honigmann, Dorothea Leighton, Ralph Patrick, Steven Polgar, Julia Crane, Jon Anderson, James Riley, Peter Goethals, Solon Kimball, and George Gambell. They, while not specifically concerned with parapsychology in anthropology, have at different stages of my career given me the scientific rigor, and at the same time the intellectual openness, to pursue studies on a subject so elusive as parapsychology. J. B. Rhine has by his regular correspondence since 1972 been an indefatigable source of energy, encouragement, and timely advice almost from the inception of my interests in parapsychology. The Foundation for Research on the Nature of Man, the Journal of Parapsychology, the Parapsychology Review, and Current Anthropology have frequently assisted with special problems related to this project. Most of the contributors to the present volume have provided constant support to this project since 1974. Jule Eisenbud, J. N. Emerson, Harris Walker, and Roger Wescott have been particularly helpful.

I am indebted to Plymouth State College of the University of New Hampshire and particularly to my colleagues and the Department of Social Science there for financial and other support through the years 1974-1976. Southern Methodist University made my work possible from 1971 to 1974. The National Institutes of Mental Health and the University of North Carolina Department of Anthropology financed my medical anthropological fieldwork in Jamaica in 1970-1971, and this led to my initial interest in the subject. I was sponsored by the University of the West Indies Department of Social and Preventive Medicine and was associated with the Caribbean Food and Nutrition Institute and Robert Collis of the World Health Organization during those same years. Maude Stiles and Denise Lozier have provided invaluable assistance with preparation of the manuscript. Lastly, my wife Anne and son David have tolerated me during these years.

Joseph K. Long
October 1976

Part I

Parapsychology and Anthropology

PARAPSYCHOLOGY IN ANTHROPOLOGY
(or, Don Juan's "Separate Reality" Revisited)

Joseph K. Long

Preliminary Comments

Extrasensory Ecology is the first book ever written about parapsychology and anthropology for anthropologists. It is edited by an anthropologist and most chapters are by anthropologists. Although anthropologists have occasionally shown an unabashed interest in psi, or paranormal phenomena, in primitive cultures since the days of Andrew Lang, it was not until the appearance of Castaneda's work that anthropologists were forced into making some concerted effort to understand the paranormal aspects of culture. This chapter explains how that came about, tells why it should have come about earlier, and makes some tentative suggestions as to how anthropologists, as scientists, may most productively approach psi in human behavior.

* * *

Nearly a decade ago Carlos Castaneda's Teachings of Don Juan appeared. The years following proved this work to be one of the most important books in the history of anthropology. This was not because of the verity of the sorcerer, Don Juan, who, in fact, uttered specious and self-contradictory but supposedly not-to-be-questioned sacred doctrines ad nauseam. Rather, it was because America had died spiritually, in part as the result of a religious battle to save a country which had never been Christian to begin with. The students who were called to fight the war were rebellious and, paradoxically, they were often introduced to the types of psychedelic drugs and a drug "culture" of sorts (which Castaneda's book had the later effect of promoting) in the very country they sought to save. For all culture had to do with it, Don Juan might as well have been a brilliant but confused lieutenant returning from Viet Nam, for either way he would have reenacted the holy ritual confirming the myth of the archetypal genius-schizophrenic shaman.

Don Juan won out, hands down, and avid readers of the Castaneda books filled the anthropology classrooms for several years. The books and the style finally lost the glimmer, but few who had read them came away without feeling that they had not tasted a bit of cultural "essence" and personal "primordial id" which they had found nowhere else--except perhaps by the use of psychedelic drugs. Most students lost interest in both Don Juan and the drugs, but some of the diehards felt that there was more than a kernel of truth to Castaneda's basic message: there is a separate but real if nonordinary (nonordinary to us) reality out there, and if we are to fully comprehend other cultures we must also understand that reality.

Psychologist Charles Tart worked in the laboratory at the same time that Castaneda worked in the field. Tart concentrated on a thoroughly logical but philosophically revolutionary premise involving altered states of consciousness. This premise stated that altered states not only could lead the personality into different reality fields but that these new realities could actually be studied by the behavioral scientist who dared to enter these same other-reality boundaries. This culminated in his classic Science article (Tart 1972) on the various possible states of consciousness and the possibility for reality-state-specific sciences. It was only incidental at the time that Tart had done research on so controversial a subject as extrasensory perception and on so nebulous a subject as "consciousness." The fact was that anthropologists had been studying nonordinary realities, trance and possession, drug-related behavior, and other altered states of consciousness for years but seldom by operating as state-specific scientists. Hence, Tart's and Castaneda's work dovetailed, at some scientific expense and embarrassment to anthropologists, particularly to those who prided themselves on their expertise in the field of religion and other matters in which the nonordinary states would expectably be important.

Anthropologists had almost no knowledge or interest in parapsychology, humanistic psychology, consciousness research, or the psychology of altered states. What they *did* have was a vast literature about primitive religion and magic, including some descriptions which sounded similar to Castaneda's. Most of these descriptions were comparatively useless, representing some anthropologists' field experiences in which they *talked* to primitive people about what they *said* they did. Much of the content of those reports was fantastic (and probably untrue and not believed as far as the informants were concerned), and it was easy enough to dismiss the entirety of such reports as representing myths or folktales which functioned to justify the rituals and, at higher levels of analysis, easy enough to dismiss even the rituals themselves as being mere representations of psychosocial functions to support superstitious peoples and technologically retarded societies.

Among those vast ethnographic field studies were some rather bizarre statements, some from second-rate ethnologists who were merely confused about cultural differences but some from proven fieldworkers and theoreticians such as Ralph Linton (1927), Robert Lowie (1956, 1963; Murphy 1972: 159-75), John Swanton (1953), George Devereux (1953, 1961), Geoffrey Gorer (1935, 1938), A. Irving Hallowell (1934, 1942), Weston La Barre (1959, 1962), and many others. These statements clearly indicated that the ethnologists believed they had observed events which could not be related to known physical processes and which could not be explained within the scope of anthropological theory (Linton, Swanton, and others, however, certainly recognized that their observations must be directly related to the field of parapsychology; J. B. Rhine, personal correspondence 1971-72.) Regarding Malinowski's famous bouts with Radcliffe-Brown it is said that the former always lost the theoretical argument but then was always proven to have been correct in his predictions about the facts based on his theories. Hence it seems as if Andrew Lang (1894, 1897, 1898) might have played a similar role in his bouts with Edward Tyler regarding the importance of psychical research:

> ... it might seem to be the business of Anthropology, the Science of Man, to examine, among other things,

> the evidence for the actual existence of those alleged and supernormal phenomena.... About the psychical condition of the savages who worked out the theory of souls and founded religion we necessarily know nothing. If there be such experiences as clairvoyance, telepathy, and so on, these unknown ancestors of ours may (for all that we can tell) have been peculiarly open to them, and therefore peculiarly apt to believe in separate souls [Lang 1898].

Lévy-Bruhl's (1923) work is of a similar vein. It was, further, disturbing to see psychologists like Irvin Child (1973a, 1973b), so well known for their anthropological contributions, turning to research in and unbridled enthusiasm for parapsychology.

By 1971, although few of them had made any direct connections between their work and the field of parapsychology, several hundred students were at least aware of something "like psi" for purposes of fieldwork, and by 1973 several reports had been published. Most of these were only small segments of studies which had been done on religion, psychological anthropology, drug use, or medical anthropology, but these brief reports contained enough substantive material for the reader to understand (with more certainty than for the Castaneda books) that this was something out of the ordinary, probably like ESP. Some of the work of those students is reported here, some is cited in the concluding chapter, some publications have simply not been discovered by the editor, and some is still in the process of being studied, analyzed, and published.

In 1974 a few of the curious organized the Rhine-Swanton Interdisciplinary Symposium on Parapsychology and Anthropology for the annual meeting of the American Anthropological Association in Mexico City. It was a truly interdisciplinary gathering, mainly of non-anthropologists (including several whose chapters appear in this volume), who made two powerful contributions: (1) substantive reports on developments in research and theory which tied parapsychology directly into anthropology and thus for the first time forced an awareness of parapsychology and its relevance on the anthropological community; and (2) the educating of anthropologists about some of the basic essentials of parapsychology and how the Castaneda-type work related or did not relate to the solid laboratory research of the past 40 years. To the profound amazement of the organizers and participants, this symposium was among the best attended and most vehemently discussed (see the conclusion to Bharati's chapter, which follows) of the entire four-day meeting. (An account of the personal details and politics involved in this and other major steps of parapsychology into the discipline of anthropology occupies most of Chapter Eight of a book on the development of parapsychology as science by Stephan A. Schwartz which is slated for publication by Grosset & Dunlap, 1977.)

To analyze the meaning of the 1974 symposium beyond simply reporting the incident is to depend too much on speculation and the writer's personal enthusiasm. But it should be observed that the audience was not comprised mainly of students, so this represented no youthful revolt. There have been no hoards of anthropologists going out to study paranormal phenomena in the field, so it represented no groundswell movement to precipitate a new sub-field of anthropology. Anthropologists are not really as eclectic as they would like to have it, but they are curious and they are concerned about keeping up with new developments in other fields. I think most people attended the meeting because they sensed a certain deficiency in their work following the temporary Castaneda romance, and they wanted to hear about alternative ways of dealing with the concepts of altered states and nonordinary realities.

The road to cosmic consciousness through parapsychology is a longer one than The Journey to Ixtlan (Castaneda 1972). Having personal convictions about the reality of psi (or the "separate realities") is not sufficient for insight into the culture-bound paranormal, nor does it provide a means (any more than the fieldworker's constant ingesting of drugs does) for doing better fieldwork.

Parapsychological research, in anthropology or elsewhere, is a consuming thing. One does not get the impression by reading the synthetic overviews of psi researchers like J. B. Rhine, or by digesting the concepts of psi scientist-popularizers like Arthur Koestler, that these great leaders of the movement are satisfied with what they have been able to make out of their extensive studies. The most one may find is that the truly great thinkers in parapsychology, along with some in philosophy, physics, and biology, feel that the whole concept of reality and of a para-normal (or even a normal) is probably extremely naive and very largely an irrational linguistic product of Western Civilization and its philosophies. These philosophies have dominated the world's recent events because of technological power. This is not to suggest that Eastern philosophy is ahead of the Western relative to psi, but only that the reverse is not true.

For those of sufficient acumen to distinguish a good theory from a postulate solidly grounded in research, it quickly becomes evident that the "established facts" of parapsychology are internally inconsistent as well as in gross contradiction to the real world as the scientist himself knows it. (The contradiction is admittedly slight for quantum physics, but that is the one exception to this rule.) In terms of study and research it is a little like weighing a vacuum ("ether"), measuring its length, tabulating its color, and determining how it evolved from other species.

Gardner Murphy (1961), a typical but brilliant psychologist, does not believe in an afterlife (for himself), but he has fairly well established by standard scientific procedures that there is one--and he knows that he has, for all intents and purposes, "proved" it. If Manning's (1974) examples of authenticated art work done by deceased individuals (Klee, Matisse, Beardsley, Goya, Dürer, and Picasso) by "automatic painting" through the living is not a hoax, then the "proof" for survival will even have advanced a notch. Yet many--perhaps most--psychical researchers, myself included, expect, like Murphy, to be quite thoroughly dead after they "die." Although most of us have observed or experienced genuine psi phenomena, the religion we call "science" appears to be stronger than any other type of conversion experience which we could undergo. In spite of this, I say it is not a hindrance.

Scientists have, on the one hand, never known as much as they thought they knew and, on the other, have never had enough confidence in what they really did know. The anthropologist who avoids a confrontation (through research or by personal experience) with the paranormal because "it all makes no sense" or because "I can never believe it's really so" is selling himself short. As Margaret Mead stresses in the fourth chapter here, the matter of belief is irrelevant to scientific research. Making the reader believe in psi is an objective this book does not have. But it is important for scientists to be aware of what is going on at even the so-called fringes of science. Quite apart from that, anthropologists, among all students of human behavior, should be able to cope philosophically with the subject of parapsychology in order to be able to comprehend culture theory in its broadest meaning, and they should be aware of some of the basic research which has been done in parapsychology in order to be able to make informed observations about psi encountered during fieldwork. A persistent ignoring of the relevancy of parapsychology in anthropology is nothing less than scientistic ethnocentrism.

The evidence put forth in this volume indicates that psi is often of major importance in societies other than the mainstream Western, and quite different evidence has indicated that it may be fully as important in the Western society. We do not know how prevalent it is, whether we will garner great quantities of verified instances of psi as we become more aware of its manifestations, or if in fact we will find no more psi now than in the past; no serious cross-cultural research has been done on psi and we can only speculate upon which types of societies may manifest the most psi.

I hope that we anthropologists do not suddenly descend on the poor innocent peoples of the world's developing countries and demand that they "perform psi." But the problem of psi, in anthropology as in all other fields, is a critical one, and I do hope anthropologists will become sufficiently interested to recognize it when they see it, to report it like it is, and to incorporate their own findings into the larger body of anthropological theory.

We are experiencing an occult or, perhaps, scientific-mystic explosion. Transcendental Meditation cloaked in the Scientific American robe of respectability is but one indication of this. I can make no judgments about whether this is good or bad, socially or scientifically. But as a part of the culture which produced the Don Juan books and is now replacing the psychedelic age, it is a potent force. Occult paperbacks, magazines, and newspapers represent one of the most solid economic ventures going. If the scientific study of primitive magic is legitimate, then the scientific study of modern occultism is also. If a knowledge of parapsychology is relevant to the study of witchcraft, then a knowledge of parapsychology is relevant to the understanding of modern mysticism.

Those within anthropology who opt to study parapsychology will be products of the same force which produced the psychedelic age and occult explosion. But we will not be a part of either unless we develop a fixation on mystical explanations involving separate realities. We may overlap with the occult, if psi really is facilitated by drug-induced, meditative, or ritualistic states--and it appears that it is so facilitated. To deny the stimulus diffusion relationship between parapsychological anthropology and occultism would be as nonsensical as to deny that sexual urges are influenced by hormones simply because the objects of those urges are socially and culturally determined.

Anthropology professors will continue to use the Castaneda books, employing a rationalization approximately like so: "The lions must be fed. But that doesn't mean one must pay attention to it or get involved with it in one's own research or consider the possible implications of psi research to the very core of anthropology itself (even if psi exists, which is probably doesn't)."

But there is an alternative route. If Castaneda's approach is superficial and non-scientific, or if his verification procedures are lacking, then those points can--one hopes this is true!--be established anthropologically. Parapsychology is a well-established sub-field (which belongs to all other major disciplines), and those who do not avail themselves of her substantive fruits are simply flying blind--not unlike Castaneda.

Students are perhaps the best teachers, if we will but observe them. They have abandoned Castaneda but they have not accepted the facile argument that his seductive quality comes simply by use of a combination of Don Juan's tricks and his own alluring prose. The students are looking for answers. The answers lie in more thoroughgoing anthropological investigations of the paranormal in other cultures. The alternative to such investigations is a sterile occultism for students and static anthropology for professors.

The author's unabashed impression of contemporary anthropology is that the comparatively recent emphasis on cultural ecology as a sub-field of anthropology is one of the most potentially productive ones. It may be assumed that, because of the religious implications of parapsychology (even though theologicans and religious leaders have avoided or attacked the field with a passion), psi phenomena cannot be investigated under the aegis of cultural ecology. That assumtion is absolutely wrong unless one also assumes that nothing is "ecological" unless it has a material existence; and then, they would also assume language to be irrelevant to cultural ecology. This book provides evidence showing that not only does psi influence material objects and events, but it grossly influences our perception of material objects and events--acting in much the same way as sight or language. This is but one of many approaches possible for studying psi in anthropology; this introduction lays the groundwork for the eminently practical approach we have labeled Extrasensory Ecology.

* * *

Concluding Comments

This chapter has been largely devoted to observing what, to many, is the obvious: the explosion of interest in psi and psi-related phenomena, the direct involvement of anthropologists as the result of Castaneda's work, and the scientific dilemma which studying psi will pose for many anthropologists.

But it is not an open-and-closed case. Many anthropologists feel a severe strain on their credibility as scientists and on their ability to incorporate still another complex perspective on human behavior into their frames of reference. The next chapter attacks the Castaneda work (and, along with it, all work which would incorporate parapsychological principles), not on methodological grounds but on Castaneda's own personal territory: the separate reality. Bharati cites the logical inconsistency of trying to make scientific sense of materials which are described as "separate realities": realities which are different, perhaps in contradiction to, those of science.

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SEPARATE REALITIES: SENSE AND (MOSTLY) NONSENSE IN PARAPSYCHOLOGY

Agehananda Bharati

Editor's Comments

Dr. Bharati's chapter goes against the whole thrust of this volume. I disagree with virtually every statement he makes. Yet there are good reasons for including this chapter. First, he originally prepared these remarks with an emphasis on Castaneda's (1971) A Separate Reality at my request for the Rhine-Swanton Interdisciplinary Symposium on Parapsychology and Anthropology of the 1974 annual meeting of the American Anthropological Association in Mexico City. As such, they provoked vehement discussion from other symposiasts as well as from the audience. Because of the importance of Bharati's statement in combination with transcripts of the tape-recorded discussions, they are included together here.

Another reason why this chapter is included is that I agree with some rather general concepts which Bharati presents. The forest is otherwise lost in the trees of other arguments and will probably be overlooked by those with a more purely parapsychological background or by those who have not read the Castaneda books.

Bharati makes two basic points here. One is that

Castaneda (1968, 1971, 1972, 1974) is related to a wave of occultism which is sweeping America and other countries, and that neither Castaneda's anthropological reports nor the occult concepts such as reincarnation bear any relationship to reality. (As to the occult concepts, I can only agree, and so that point is not further discussed here.) The problem of Castaneda's "reality" has never been fully discussed or solved; in fact it may never be. Castaneda has steadfastly refused to participate in parapsychological or any other academic discussions about his own work. His latest book had not emerged when Bharati was preparing this contribution, and Tales of Power is concluded by Castaneda's taking a suicidal leap off a high mesa, perhaps into oblivion. Some (Anonymous 1973) suggest that that is where he belongs, but his books undoubtedly stimulated much of the interest in this volume and it is only appropriate to discuss his "reality."

Had it not been for the proclamations of two highly distinguished anthropologists, Castaneda's "reality" might never have been considered as more than ramblings about a psychedelic experience. Dr. Edmund Carpenter (1968), Carnegie professor of anthropology, Stevens College and University of California, Santa Cruz, says that Teachings of Don Juan (precursor to the Reality book) "reports a human reality, not an equivalent of that reality." Dr. Walter Goldschmidt (1968) states that "Teachings is no mere recounting of hallucinatory experiences." The work of Charles Tart (1972a) promised to provide the cognitive framework to make the "reality" of altered states of consciousness (e.g., with psychedelics) amenable to scientific studies, when viewed somewhat allegorically. But it was, shortly, revealed that research which had been done with the altered-state paradigm had turned up a plethora of new types of paranormal phenomena (Tart 1972b). As Jonathan Cowan (1975) of the University of California, San Francisco, Department of Pharmacology has shown, Castaneda's work dovetails with recent theories of brain function. Both parapsychologists and paraphysicists (e. g., Hardy, Harvie & Koestler 1975; and E. H. Walker in this volume) recognize that everything reported by Castaneda could theoretically happen. The question is, "Did it?"

Parapsychologists, turning to ever more stringent methods in the search for the absolute scientific "proof" for the paranormal, are intrigued but noncommital about the Castaneda reports or even the host of much more plausible anecdotal examples which have come from anthropologists for the past century. Anthropologists, in an abysmal ignorance of the vast literature of parapsychology, have almost totally ignored the paranormal dimension and hence can be of little help. As Eisenbud observes in this volume, what is sought from the anthropologist is not more such examples but rather some sense made of it--some conceptual framework beyond dismissal as hallucination, magic, religion, and psychological defense mechanism. As long as anthropologists view the paranormal as being a threat to the traditional anthropological interpretations regarding religion and the supernatural, such a synthesis is unlikely to be forthcoming. But as noted in the final chapter, Part VII, it is possible to place psi phenomena in primitive religions within the framework of certain anthropological theories (e. g., cultural ecology) without contradicting those principles of human social behavior currently accepted by the leading theoretical anthropologists. Greist has similarly placed psi within a cognitive framework which does no apparent damage to linguistic principles.

To return to Bharati's general view of reality: we are not much closer to understanding reality now than we were when Castaneda's work first appeared. And it is precisely because of the virtually occult, anti-scientific stance of the Castaneda-style popularizers, on the one hand, and the rigid hear-no-evil, see-no-evil stance of those who view themselves as the ultimate "scientists," on the other, that the psi faculty in culture is so poorly understood. As we anthropologists better educate ourselves in parapsychology and extend our research to include the psi dimension we risk the trap of taking one of these two extreme views. A major objection voiced by parapsychologists to anthropologists, including myself, is that we do not "believe." To paraphrase Margaret Mead's comments in the chapter which concludes Part I, it is just this, believing (or still worse, knowing), that we cannot do as scientists. It is not our purpose to believe or not believe, but to examine the evidence and try to make some sense of it.

Bharati's second basic point is that parapsychological anthropology is following the lead of psychiatry and developing an emic rather than an etic vocabulary.* It follows, he says, that psi events become mere cultural or cognitive projections of people's belief systems. I disagree with his use of terminology and his accompanying logic. Emic and etic involve complex concepts and are not actually relevant to the question of the reality of events. This point is well demonstrated by Bharati's own examples. For instance, the cognitive domains of medical and anatomical terminology change just as radically and rapidly as those of psychiatry. A virus is quite different now (i. e., includes a different cognitive domain) than in 1950, yet it was "real" then and is "real" now. The cephalic index meant something different in 1900, 1920, and 1970, and yet is as anatomically "real" and as permanent as the skull which it describes.

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*Bharati's use of these two terms is, to state it briefly and crudely, as follows: emic describes words as they reflect the values and cognition of the speaker as he represents a particular culture; etic describes those terms which are used for clear, standardized, quantifiable traits, independent of the researcher or the people he is studying (e.g., 20 people, 42 meters, 14 grams, etc.).

But again, Bharati has a valid point. We as anthropologists--the same goes for parapsychologists--must learn to name phenomena without reifying them. Let any person who believes PK is a single phenomenon compare Eisenbud (1967), J. Fuller (1974), Manning (1974), Puharich (1974), Rhine (1970), Roll (1972), and the Uphoffs (1975). If there are any physical similarities among these diverse phenomena, beyond the fact that all remain unexplained (except by Walker's analysis here of what may in fact be a single form of PK), then it would be truly astounding. Bharati's firsthand report here of a supposed levitation demonstrates this; I have covered the methodological or emic problems of levitation in the concluding chapter.

In sum, Bharati will offend some readers, but they would do well to search for two basic truths he establishes. First, anthropology has not successfully dealt with the paranormal. Last, our knowledge of the physical properties of psi is too limited for us to assume that each such event has a quantitative tangibility.

* * *

I have often wondered if bad philosophy can make good anthropology. I think it cannot. Questions posed by friends of psi, some very few of them anthropologists, are always interesting, exciting, and engaging, but the criteria adduced as proofs are oftentimes soft, and understandably biased. I wish that anthropological dissertations were written as well as Castaneda's Don Juanica. But Castaneda's books are questionable anthropology, whatever else they are. If there is a Don Juan, he is not a Yaqui any more than many non-Jewish midwestern American women are Cherokee as they say they are. Neither Don Juan, nor Castaneda, nor the Yaqui have the sort of privileged information which the books bespeak--there is no such information. I regard these books as well-told trips, and there is nothing wrong with that except that it isn't anthropology. Dobkin de Rios (1975) has proved beyond doubt, it seems to me, that good ethnology and good anthropology can indeed be written about topics which might have seemed esoteric and suspect to old-time anthropologists.

A year ago, I was asked to read a paper at the International Parapsychology Foundation meeting in London. Among the half a dozen or so outstanding scholars (physicists, sociologists, psychologists) there was a complete polarization from the outset: the believers would buttress all they could find to prove psi, the nonbelievers would marshal all to disprove it, or better yet, to show its triviality. My own view at this time is that some of the Zener card work does indeed point toward the occurrence of precognitional skills in some persons. I believe that PK, all of it, is fraudulent. I am, however, most directly concerned here with the ethnological content of parapsychology, not with the ontological status of psi. Encouragement toward inclusion of this whole theme comes from the "new" (now no longer so new) "ethnography," with its sober rigor and its implicit rejection of all kinds of psychologisms and covert romanticism. I see the separation, and the staggered application of the emic and the etic as the most elementary, yet as the sharpest tool of cognitive anthropology and the new ethnography. Therefore, I now regard all parapsychological parlance as emic, traceable in terms of the population or audience which generates one or more or all of the topics assigned to parapsychology (psychokinesis, telepathy, clairvoyance and clairaudience, precognition, etc.). I also assign all parapsychological terminology to the emic, including the term "psi-factor": these are emic sememes in the semantic-cognitive maps of European and American populations at this time.

I predict the objection of believers who are also scholars: if you call parapsychological talk Euro-American emic, then you must call all scientific talk emic, and nothing would remain for the etic. Not so. I concede etic status only to those sciences which insist on random replicability and on falsifiability by consensus as the matrix of their strategy. Thus, I concede etic status to anatomical and to most other medical terminologies, but not to psychiatry: the language of the psychiatrist--clinical psychologist--is American-European urban emic. Unlike the terms "multiple fracture" or "sickle-cell anemia," which describe an object, a patient and his syndromes, terms like "paranoid-schizophrenic" and "manic-depressive" do not describe any objective syndromes, but they elliptically state the ideological and moral consensus of the psychiatric profession about what is normal and about what ought to be conformed to. Let us keep this in mind, since I am going to return to this linguistic device, created by the British American analytic philosophers after Wittgenstein, in a more specifically ethnological context.

Talk about "separate realities" modo Castaneda, Alan Watts, and now the whole plethora of swamis, gurus, and their steadily growing clientele in the West, is emic talk, part of the linguistic corpus of circumscribable audiences. On campuses all over America, students who are converts to one or another Asian cult believe that the human brain is surrounded by a cosmic substance called ojas, that the serpent-like power kundalini moves along the spine, and that, in short, the cosmology and psychology of the East supersede the cosmology of physicists, chemists, etc. And this is what I mean by emic talk. As such, it is indeed, and very centrally so, the subject matter for the ethnologist who must exhaust all accessible universes of discourse, since they are part of the cognitive map of the people studied. In other words, just as anthropologists since Frazer and Tyler have studied religious behavior alongside political and economic behavior, they should now add on parapsychological behavior, via parapsychological talk, wherever it occurs. The ontological status of parapsychological statements is then exactly on a line with that of religious statements: "Beethoven dictated his posthumous symphony to Rosemary Brown" would be on the same cognitive level as "Joe Smith talked to the Angel Moroni"--i. e., these are emic statements of (emic) facts, hence important to the field anthropologist investigating a community which generates a corpus of expressions that includes such utterances.

The philosophical *and* the etic footnote to *all* statements belonging to the nonempirical and extrarational *is*, of course, that individual experiences do not confer ontological status upon their content: from the fact that Moses saw the Lord in the bramble bush, it follows emically that the Lord exists, but etically it follows only that some people have visions so strong that they describe them in theological terms. When people make statements in psi-factor language, they make emic statements, believing--if they knew this terminology--that they are making etic statements. When anthropologists talk about "separate realities" while they are under the influence of psychotomimetic drugs or meditational techniques, they are talking *emics*, believing they are talking *etics*, even when they know about this dual ethnoanalytic tool. Some cases were tragic, like that of the late Allen C. Coult, a brilliant anthropologist who became a convert to the psychedelic, making a total switch from the etic to the emic, all the while believing that his work was etic and that his opponents simply were etically wrong. In a less pathological degree, anthropologists and other social scientists espousing psi also believe, it appears, that they are on to something new in the etic field of description.

Once we have shed our desire to partake in some kind of privileged information of the sort mystics and prophets claim to have, we should indeed embark on ethnographical analyses which include the parapsychological dimension as part of the cognitive repertory of societies studied. One day back in the early fifties, I got the word that some holy man in the Almora district in the central Himalayas had and was displaying *laghimāśakti*, one of the seven great occult powers, i. e., the power to levitate. I journeyed to the village in question. And here indeed, the holy man was to give another of his mysterious treats for the benefit of anyone who would sit through the night and attend. There was a crowd of close to fifty that night, there was a full moon, and I sat on a mat on the ground outside the holy man's hut. The crowd was chanting *kirtan* (a litany-like procedure) as incense was burned through the wee hours of the morning. At about 6:00 a.m. people began to disperse and the holy man withdrew into his hut. Two men asked me how I had liked the feat. Which feat? Well, hadn't I seen him levitate? No, I said. In that case, all bystanders agreed, I must either have been asleep or else I was not sufficiently pure to see him levitate--that night he had in fact raised his body well over three yards from the ground...

About two years later, I learned that the holy man was Jairam Baba, a North Indian saint the spread of whose name and fame was entirely due to his power of levitation and the hundreds of witnesses to his skill.

What we have to do here, I think, is to borrow a strategy from analytical philosophy: some verbs in any natural language do not describe an object, but the state of the mind of the speaker, although syntactically they are structured identically with other verb phrases which describe objects. Stevenson called the latter descriptive, the former persuasive terms. ("Polly is 18" is a descriptive utterance saying something about Polly; 'Polly is pretty," a persuasive statement saying nothing about Polly, but about the speaker.) I suggest that the phrase "X levitates" operates exactly like the phrase 'X is popular"--i.e., the term "popular" says nothing about its grammatical subject, but about other people who are feeling in a particular way about "X." Do not confuse this with religious "belief vs. unbelief" language--this is an entirely different, dry, analytical *etic* strategy and has nothing to do with faith statements, which are *emic*.

I am not impressed by "evidence" from believers' desks, but I am also not impressed by evidence from disciplines or discipline-segments which are incommensurate with the methods of cultural anthropology. Quantum mechanics and the quantum jump, analogies from microsystems, etc. simply are of no help to cultural anthropology, because the cultural anthropologist cannot even in theory stipulate a basic minimal unit except of course in linguistics, where the phoneme and the morpheme are indeed minimal units--and they *are* fertile models in non-linguistic anthropological research.

We have one type of query which straddles the emic and the etic, hence must be undertaken in both the emic and the etic phases of data collection and evaluation: on each level, we have to ask what sort of statements or action chains would *falsify* or *refute* a statement made rather than what

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would verify or prove it. The original recommendation for the need of adducing falsification rather than--or at least along with--verification as an empirical device came, of course, from Sir Karl Popper a long time ago; but as in the case of wine and violins, age seems to increase the fecundity of this particular device. What sorts of statements would refute the parapsychologists' claim to the witnessability of psi-events? What sorts of statements would be accepted by the Hindu village curer as refuting his claim that he has successfully exorcised some malevolent spirit? If a statement is not refutable, falsifiable in principle, it is thereby proved to be non-scientific, whatever else its status may be.

In my own area of specialization, South Asia, the field is wide open for the inclusion of parapsychological reports, provided these are handled as emic input. The virtually ubiquitous cases of possession in India and Sri Lanka, the constant alertness of the villager about ghosts and witches, these and other themes so far studied under the rubric of religious or ethnotherapeutic behavior may have to be reclassified as psi-related behavior by the rule of greater research fertility through narrower heuristic foci. Such a reclassification would be similar in a way to the much more ramified history of the separation of sociology and anthropology at an earlier date: much of what sociology covers is also anthropology, but it is not quite the same, standing in need of discipline division for the sake of more and better information and analysis.

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Comment by Jule Eisenbud

Bharati's distinctions regarding the difference between emic and etic and his invocation of Karl Popper's tests for falsifiability are most to the point and I would unhesitatingly agree that scientists who do not pay attention to these metascientific critiques are simply flying blind. I've read a good deal of this stuff, including sources cited by Bharati, and I find most of it very astringent, as bracing as a cold shower in the morning. But when you have taken your shower, you have to get out and do the grubby business of the day which is digging, into one thing on your part or into other things on mine, and it isn't often an ideal situation. We find that you can not guide yourself wholly by the distinctions between emic and etic. You can not really keep Popper in one hand and do your digging with the other; it just doesn't work. The fact is that, as Whitehead pointed out many years ago, you can't live on disinfectants.

Now it seems to me there is a third category, one that Dr. Bharati didn't mention. He mentioned the emic and the etic to very good purpose. But I feel there is also the emetic, as suggested once by Gerald Berreman. The whole thrust of my chapter in this volume is essentially that to science or to society, or to developing theories of culture, the hard facts of psi, especially the destructive aspects of it, provide a noxious stimulus to which they can respond only in an emetic way, by voiding these facts. Now, on the current scene, we find also that some thinkers and some investigators rationalize what they are doing in terms of hard-head supercriticism, or "scientific critique," when what they're doing is merely puking. When they can't stand certain data, they puke; and it comes out as papers on the philosophy of science.

I take special umbrage, of course, at Dr. Bharati's statement that all psychokinetic phenomena are fraudulent; a flat broadside, a blanket statement. Such an assertion is not etic and it is not wholly emic. Although it shares some of the emic characteristics, it is mostly emetic. I say this feelingly because, first, I have worked ten years with Ted Serios, a great physical psychic, and, second, Dr. Bharati's statement that "people who appear to do psychokinesis are merely doing something better than the best magician can do it" seems paradoxical if not flatly contradictory. If ever I saw a heads I win, tails you lose statement, that's it! It's a return to primitive magic; it is "supermagic." I have no doubt that some psychics have been fraudulent. But I have had a challenge out for some seven years to the best conjurers and magicians in the world, and I have personally approached three or four of these, to attempt to duplicate by magical means the Serios phenomena under the same test conditions used with Serios. Not only have they not taken me up, but they have en masse shown the greatest penchant for welching, weaseling, copping out, and lying that I have ever seen. Recently there has been published a correspondence (C. Fuller 1974; Eisenbud 1975) between me and one of the most vociferous of the magicians who keeps saying rather emically, "I can do it any time I would like to," but whom nothing can induce to really do it. The correspondence shows him welching when put on the carpet with the challenge of "put up or shut up." Outside of that, I found Dr. Bharati's paper fascinating.

Long. It is only appropriate to give Dr. Bharati an opportunity to respond to this.

Bharati. It is very simple. As to Dr. Eisenbud's experiences with various psychics, I simply don't believe it, that's all!

Long. That is a summary statement.

Editor's Comment

The archeological materials of the chapters later in Part VI by Goodman and Emerson also were first presented at the 1974 American Anthropological Association meeting. After concluding his remarks to Eisenbud, Bharati directed some remarks to these gentlemen. Since that exchange related to the "reality" of the evidence rather than to the archeological methodology or empirical results of excavation, it is included here rather than in association with the chapters on archeology.

Further Comments by Symposiasts

Bharati. How did your psychic identify the names of the bones? Did he have anatomical training, or what?

Jeff Goodman. No. When he is in his trance state he takes on a vocabulary which is very uncommon to his everyday discourse.

Bharati. He uses an official anatomical vocabulary, you mean? I don't believe it!

Goodman. You're more than welcome to participate in the project, and we're more than willing to set up any kind of control test and allow you to participate in it, if you're sincere about that.

Emerson. May I comment on that question also? I've had experience with George, who I described previously. He's an average Canadian truck driver, and he doesn't like to deal with bones, but as a special concession at one of the last Canadian Archaeological Association meetings a young lady was allowed to present a skull for him to study. He went into trance, as with Goodman's psychic. Then he began to talk about the skull. He did not use correct anatomical language. For example, he called the molars, "maulers"; he called the canine teeth, "fang teeth." But he was able

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to run his hand along the lower mandible and was making observations of areas of muscle attachment which indicated to the physical anthropologists present that this person had been a grain eater as opposed to a meat eater. These people have to be worked with, seen, experienced, to evaluate them before one can say, "Sorry, I don't believe it."

Editor's Conclusion

Bharati's chapter and the exchange which followed provide the editor with an outstanding example of two different emic systems, both within the framework of science and both diametrically opposed. In a sense, both views are absolutely right. They are both correct statements of specific cognitive systems, and both approaches have "worked," in a sense, for their particular branches of science. Yet in an absolute sense they are both wrong. They both assume that the reality is everything and that whether anthropologists study psi or not hinges on that reality. The objection might be raised that the reality of psi phenomena is academic, since these phenomena are established as fact (though largely unexplained, physically) as well as any other facts of science. Most importantly, however, is that psi is indeed something which can be studied whether or not one "believes" in the reality (although, as some research indicates, psi events are more likely to occur in the absence of hostility toward the concept of the paranormal on the part of the observer).

Let us hope that as the study of parapsychological phenomena in anthropology increases it does not attract students who know the phenomena are there, for they will "see" too much which is not there, and ascribe it to the wrong causes. And let us hope that it does not attract students who know the phenomena are without reality ("there is no life on Mars--or elsewhere in the universe, except on Earth"), because anything an anthropologist observes can be rationalized as a false positive in terms of hallucination or the placebo effect.

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PERSPECTIVES
ON ANTHROPOLOGY AND PARAPSYCHOLOGY

and the Direct Psychokinetic Effects in Psychosomatic and Folk Medicine

Jule Eisenbud

Editor's Comments

Dr. Eisenbud submits that illness can result directly from the psychokinetic (PK) mechanism. That is to say, the effect may be completely independent of "stress," cultural taboos or fears/phobias (e.g., "evil eye"), or the other forces commonly associated with psychosomatic illness. Although this has occasionally been indicated in medical practice, including Eisenbud's, the direct PK effect has not been recognized as a legitimate and scientific type of medical explanation until recently (see for example Smith 1976). Even now, the direct PK effect is applied only to the process of healing. Presumably, in our society psychic healers are marginally accepted, as real persons if not effective practitioners, whereas "witches," in the usual anthropological use of the term (i.e., as malevolent persons), are considered to be fictional at all levels of analysis. It therefore follows that the concept of direct, malicious application of the PK effect, albeit subconsciously and only demonstrable in rare cases, at the individual (non-institutionalized) level, is similarly rejected.

Actually, from what we have known about PK for some years now (Rhine 1970), we have every reason to expect that PK, or even the subconscious reception of telepathic messages (either loving or hateful ones), frequently becomes a direct causal factor in health or illness.

Anthropologists, who are among the most qualified to observe and interpret cases of genuine institutionalized psychic healing in other cultures, and physicians, who are among the best qualified to observe subconscious but noninstitutionalized psychic effects in medicine within our own culture, have been among the most reluctant in even considering the possibility of paranormal events as active forces. In anthropology we have increasingly emphasized the importance of nomothetic, rational, super-scientific analyses--in compensation for a half century of ideographic studies and haphazard speculation. Sophistication regarding medical technology has increased within medical anthropology, and the occasional stunningly important accomplishments resulting from the combining of a cross-cultural knowledge of culture with a technical knowledge of, e.g., biochemistry (Bolton 1973), has made us more than ever prone to expand the rigorously scientific methodologies. It is therefore paradoxical that beginning in 1974, and as indicated by recent notices of parapsychological conferences and seminars in the Medical Anthropology Newsletter, anthropologists have begun to take more than a passing interest in the potential for observing paranormal effects within traditional or folk medical systems.

According to Eisenbud, anthropologists have always had the language for investigation of paranormal effects: taboo, mana, and animism and, in the field of medical anthropology, mal ojo (evil eye), susto (soul loss), and many other terms within specific cognitive systems. And we have, through studies of archeological remains, written history, and primitive cultures, the time depth to study psychic phenomena from an evolutionary standpoint. Happily, there is no clear evidence that psi is any more prevalent within primitive cultures (although its manifestations may become more highly institutionalized there) than in our own, so it is not on the endangered list. Hence, we can readily compare psi among primitives with the much more exhaustive studies of psi in Western Civilization.

Two necessary components are lacking for this. First, since most ethnographic studies have been done more through the use of a few informants than by direct observation, and since most field workers automatically assumed that whatever sounded "merely supernatural" was just that and nothing more, it is impossible in reading most ethnographies to distinguish the supernatural from the paranormal. In medical anthropology that is further complicated by the strong psychosomatic component and the almost universal placebo effect. Hence we are confounded by the sorting of the supernatural (Azande sorcery?) from the paranormal (teachings of Don Juan?) from the natural (placebo effect?).

Secondly, since straight fieldwork is a vastly complicated procedure in itself, and since most ethnologists have little or no knowledge or understanding of parapsychology, interpretations about folk medicine become much too prone to--let it be admitted--rationalizing explanations. If we accept that all disease is partly the result of placebo effects, then, barring direct evidence to the contrary, it is rather more easy to rationalize or "explain away" the "inexplicable" than to attempt to sort out the actual and varied causal factors. The extreme anthropocentric form this takes is to reject other medical systems as "naive"; the actual findings when such cases are studied exhaustively is that folk systems may have greater empirical validity than does Western medicine (Erasmus 1961; Long 1974).

Eisenbud offers no ready solution to the problems of medical anthropology-of-the-paranormal. He does point out one obvious modus operandi of psi in disease. He further demonstrates how our present knowledge of the psi faculty may conveniently fit into different theoretical systems within the larger field of anthropology.

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No discipline comes by psi phenomena more honestly than anthropology. Such phenomena have always been an integral part of cultures whose belief systems regarding man and his role in the universe incorporate them as part of the natural order of things. In these cultures there is little conception of the paranormal as such. Divination and spirit possession, the magical practices of sorcerers and medicine men and indeed the varied external effects of ordinary thought are all part of the very fabric of society. Nevertheless, it is doubtful if further anecdotal accounts of such phenomena (the kind of thing we have had by the bushel from missionaries, explorers and anthropologists in the past) will by themselves either add to our knowledge of the basic processes involved or deepen our insight into the role of the paranormal in the life of man. For one thing, we are no longer primarily concerned with the question of the reality of psi phenomena; but even if this were still a crucial issue, it is hardly the type of thing that anthropologists ought to bother about as anthropologists. More to the point for anthropology would be a reevaluation of the data it has in this area on the assumption that there is a reality basis for the so-called supernatural in society. Perhaps a complete reexamination of the historical role of psi phenomena in the evolution of man and society would be in order.

A good place to begin might be with the question of how it is that psi phenomena, which have universally been part of human experience and belief for as long as our records exist, have been virtually excluded from scientific study and discourse. Even anthropologists, whatever their private opinion when brought face to face with psi phenomena in fieldwork, have officially regarded accounts of the supernatural as wholly made up of folklore and fantasy.

The usual reasons given for the intense resistance of science and scientists to parapsychological data--the lack of an acceptable theoretical underpinning and of a repeatable experiment, and the unreliability of the primary data--are not as valid as they are generally thought to be. It has repeatedly been shown that scientists pay far less attention to facts, in the development of their theoretical paradigms, than to their emotional, religious, metaphysical and even political convenience, however disguised these influences are, and that if the price is right in these departments scientists will reject obvious truths while hobbling along with pretty strange notions of what is what in the world (Brush 1974; Kuhn 1962; Merton 1973; Toulmin 1972). Thus the problem of science's rejection of the primary data of parapsychology, despite the fact that these have their roots in common experience the world over and despite the latterly mounting evidence from workers within science itself, goes far deeper than mere theoretical dissonance. The very nature of science as a human activity is involved, as well as the nature of the society within which science has evolved.

The textbook picture of science is that of the gradual growth of a body of increasingly refined techniques aimed at the separation of truth from error and a closer and closer approximation to things as they really are. But the fact is that, in an important sense, science has done just the opposite: it has gotten away from things as they really are. In seeking to discover underlying regularities beneath the ceaseless flow and change and variation of things, science has relentlessly abstracted events from their natural matrices and in so doing has squeezed from them the very essence of their being. Nothing less than life itself has been lost--life and that web of vital interrelationships whose outcroppings we today call the paranormal.

The great triumphs of classical science were theories of matter and motion that explained just about everything from the movements of the celestial bodies to the ebb and flow of the tides in terms of mathematical abstractions. Splendid equations filled the void with electromagnetic forces. But all this would have been exactly the same had there been no life in the universe. Life, and that improbable concentration of atoms constituting the central nervous systems of its higher forms, was a separate world within and sometimes interacting with the world of matter and motion, but it was not in essence of it. It had to be accounted for in terms of divine fiat. This seems to have been a satisfactory enough solution for Newton and his contemporaries (who apparently had their own version of complementarity) but it left us with a confusingly lopsided physics and biology, with a psychology whose prime datum, consciousness, is categorically unrelatable to the rest of the picture that science has drawn, and with an overall framework that will have nothing to do with the so-called paranormal except to deny what portion of it has not been kicked upstairs.

If we ask how life and the paranormal ever got taken out of the picture, we are surprised to find that the process was already virtually complete by the time of the early Greek scientist philosophers. Before this time we are confronted with only a few tiny islands of fact in an enormous ocean of conjecture--or worse, lack of conjecture, as this particular problem has not (understandably) been on the agenda of anthropology. Conceivably the process of devitalization began as early as the idea of returning spirits of the dead, which usually were bent on doing evil to the living but in any case were endowed with wills of their own. This was possibly the first step in the displacement of the magical power inhering in the individual to something outside the individual self. At some stage (we are completely in the dark as to the time scales involved), this power was also displaced on to objects, places and special individuals and became known variously as _mana_, _orenda_, _wakanda_, _baraka_ and by other terms, all closely linked to the idea of taboo. Once the process of projection of the human will into things outside the self got started, at any rate, it appears to have gone on to the investment of an ever-widening, more and more elaborate circle of external agencies with the power to make things happen. Gradually the will got edged out entirely as a factor in natural events as increasingly abstract concepts of force and causality took over. As these became progressively stripped of any connection with the human psyche, the last trace of psi--and with it of life--was bleached out of science's picture of how events occur and relate to one another.

But why should the human will, so potent for good and evil in the earliest stages of primitive magic, have been displaced on to things outside the self in this way?

Answers vary, depending on what armchair they come from. From where I sit, such a development may well have been the first stirrings of uneasiness--perhaps we can't yet call it guilt--at the destructive power of the human wish. It may have been the first psychological device which enabled man to absolve himself from culpability for any harm that may have come from such power.

We can only speculate on what accidents of circumstance and history dictated the necessity for this kind of projection. Nevertheless, it is reasonable to suppose that something of the sort would sooner or later have become inevitable with the development of a relatively settled way of life where family members had to be thrust upon each other at close quarters. Lévy-Bruhl (1935) wrote about the dangers of hostile wishes constantly being provoked within such compact groups, with consequent fears of being always exposed to what he saw as unavoidable, because largely unconscious, "home-bred bewitchment." But it may be that man's progressive inability to tolerate his own destructive wishes could have had its roots far earlier than the setttled manner of living that came with planting and the domestication of animals. If the basic psychological make-up of early man was anything like that of his late descendant, we would have to look no further than the perennial intrapsychic conflicts that inevitably develop within the mother-child relationship both for a potent source of fiercely destructive wishes as well as for the reason that such wishes, denied direct expression, have to be displaced and projected.

A few words on this point: Psychoanalytic investigations (good summaries of which may be found in Kluckhohn, Murray and Schneider's Personality in Nature, Society and Culture) have shown that one of the major roots of aggression lies in the vicissitudes of the neo-natal nursing situation, where things rarely proceed to the complete satisfaction of the infant's needs to cling and suck to satiety in a warm supportive maternal embrace. Frustration of the infant's so-called oral needs (a delicately integrated developmental complex of neurophysiological and psychic drives) is almost unavoidable if the mother for one reason or another is unable to satisfy the infant's periodic hunger and its almost equally pressing needs for warmth and closeness. Chronic starvation or near starvation conditions of whole primitive populations at the mercy of wandering meat supplies made the average early nursing situation a precarious one at best and possibly one of considerable deprivation on all levels. Based upon direct observation of infants as well as on reconstructions from the behavior and fantasies of older children and adults, we know that this state of affairs may result in enormous rage against what is experienced as the depriving object, the breast, and, as the infant grows older and the mother as person can be differentiated from the mother as breast, against the mother herself. But because of the fear that such rage, which we know to be murderous in intensity, could destroy the longed-for and needed source of support as well as the hated depriving object and thus result in the isolation or even the annihilation of the self, the rage is repressed and becomes in large part unconscious. Represion is, however, a psychologically unstable situation, with the result that the entire battery of both primary oral needs and orally-derived aggressions tend throughout life to seek substitute pathways for satisfaction and venting.

The two sides of what is termed oral ambivalence to the mother figure can be found in some of our earliest paleolithic artifacts. The positive side may be seen in the numerous Venus figurines found from western Europe to Siberia, where the prominence of the breasts indicates the warm supportive side of the mother as a key image in the development of both magic and religion (Eisenbud 1964). The negative side of the picture can be hypothesized from a class of widely distributed artifacts which may even be older than the Venus figures, the bear skulls found in niches or ringed in circles as if for ritualistic purposes (Hays 1963). Although the bear has been given a variety of symbolic roles in different cultures, probably the most universal image of it is as a dangerous devouring monster with fearsome fangs and dripping maw. From a psychoanalytic point of view, this would appear to be a projection of deep lying agression of infantile oral origin whose genesis preceded realistic considerations, such as that the bear is actually vegetarian. (The furriness of the bear, incidentally, places it alongside a number of things animate and inanimate that have, as so-called transitional objects, come to represent the mother.) Considerations of this type, at any rate, make comprehensible one of the only bear rituals that seems to have survived into modern times, that of the Ainu, a Siberian people who long-ago migrated to Japan (Frazer 1951; Hays 1963). In this ritual a bear cub is captured and reared for two or three years with loving care and veneration. It is stuffed with food, petted and may even be suckled by the captor's wife. At the end of this time, however, the inevitable other side of the picture emerges. A ceremonial feast is held at which the bear is taken out of its cage, taunted and tortured and brutally strangled. After flaying, its head is cut off and ceremoniously displayed, and under its lifeless snout is placed all sorts of delicious food and drink. The rest of the bear is cut up and eaten. It is not too far-fetched to imagine that something of this sort may have gone on in relation to the bear skulls of paleolithic times, and that some of the same displaced aggression went into it.

It would take us too far afield to discuss here the manifold forms the substitute outlets for displaced and projected aggression can take in the individual and in society, but the prevalence of oral material--specifically fantasies of eating and being eaten--seen in a number of patent projections (e.g., toothy devouring demons of various sorts; the universal food-offering placation, as in our Halloween rituals, of the returning dead, who are unconsciously felt to be victims of our own oral aggression; the residues of this in many funerary customs) all point to the infantile nursing situation as the presumptive source [see note 1].

However this be (and granting the complexity of such determinants when translated into social and historical terms), the essential background of how science came to reject the paranormal is probably not too far from what has been touched upon here, namely, the need to externalize the will with its intolerable load of destructive wishes. It seems clear, at any rate, that once the linked notions of force and cause got safely free of any contamination by the sometimes malevolent human will, it became the implicit task of science (or rather of a burgeoning "physick" that was ultimately to metamorphose into what we today call science) to keep life out of the picture and thus to constitute a bulwark against the remnants of magic and superstition still found in society.

Several historians of science almost had the key to this sequestration of science from its natural living heritage. Cornford (1957) was one of the first to trace the dehumanization of early thinking about natural phenomena and the progressive trend toward a mechanical materialism. In this penetrating study of the origins of Western speculation, he wrote: "The unconscious aim of such [early] science must be to get the life out of matter, and finally to eliminate life altogether from its conceptual model of the real." And the social historian Kelsen saw that the conventional concept of causality must have somehow had its origin in primitive fears of retribution for wrongdoing and evil, as the original words for "guilt" and "cause" were identical in both the early Indian languages and in Greek, whence they were taken over into juristic and philosophic forms (Kelsen 1943). But neither had the missing link to this puzzle. Only Freud, leaning heavily on Frazer (1890) (even though Part VI of Frazer's book, with its immense store of data on the transference and expulsion of evil by primitives, had not yet appeared), began to tug nervously at the threads of the problem because he wondered how it was that the entire primitive picture of magic and taboo and ambivalence toward the dead came to be repeated in the thinking and behavior of the obsessional neurotic, in whom magical death wishes are prominently displayed. To account for this Freud had to postulate a sort of psychological reality to the power of the wish, his so-called "omnipotence of thought," or the equivalence of the unconscious wish and the deed. But because it was difficult for him to account for the universal cultural persistence of ambivalent attitudes toward the dead, as well as other "symptoms" of guilt and magical "undoing" (the institutionalized religiosity of the masses, for example), without a firmer basis in actual reality than this, he went on to postulate the primal patricide, a sort of prehistoric crucifixion, for which, according to him, mankind has had to atone ever since.

Freud was clearly off course in this and in some of the other notions he put forth in his much derogated foray into anthropology, Totem and Taboo (Freud 1913). (He himself showed every sign of being uneasy with certain aspects of his theoretical constructions.) But he was entirely right to ask the question he did--namely, how can we account for the persistence and continued institutionalization in culture and society of superstitious attitudes and practices (he was thinking mainly of religious practices) which are so much at variance with the rational scientific viewpoints of the day; and he was right, as every psychoanalyst and depth psychiatrist can testify, in pointing up the intimate connection between guilt over death wishes and the development of ideas which closely parallel the entire inventory of taboo. One wonders if he might not have been able to come closer to a solution had he been able to postulate more than the mere psychological equivalence of the thought and the deed--had he, in fact, been able to conceive of the possibility, in some form, of an actual equivalence.

Whether or not such a possibility exists and, if so, what its role in the everyday affairs of life and society is, is an open question. But there is little reason to bar the idea. If you simply put together two phenomena for which we now have ample experimental evidence--psychokinesis (Rhine 1970) and telepathic influence at a distance (Vasiliev 1965)--the door opens wide to a variety of means of paranormally executing destructive wishes. The chief remaining problem would be to investigate the manner in which these could conceivably operate on an unconscious level, which we might expect (as did Lévy-Bruhl) to be mainly the case, and to audit the ways in which such phenomena manage to integrate themselves, however unobtrusively, into the patterns of everyday existence.

I am not referring principally to the many accounts of evil eye and hexing that come to us from different cultures (Halifax-Grof 1974) (although the role these behaviors play in social organization in some present-day cultures might well be reevaluated in terms of the new perspective--see Hallowell 1953; Titiev 1956) but to the somewhat more subtle investigation of fires, accidents, fatal and near fatal illnesses in interpersonal contexts that can be radically restructured when the possibly real external effects of unconscious needs and wishes are taken into account (see, e. g., Roll 1972). Although it may be possible to devise techniques to close in on this problem statistically, I believe that the best approach initially is through depth psychology and psychoanalysis (Eisenbud 1970, 1972, 1974). The task of anthropology would be to delineate the ways in which society has attempted to handle what I suspect to be a widespread unconscious awareness of the problem, including its rationalized defenses against it.

A good example of the latter is the prevailing attitude toward precognition, a special case of science's rejection of the paranormal. The legal and religious sanctions massed against the several forms of this age-old phenomenon are stronger than against anything else in the catalogue of psychical research. One might suppose that this is because nothing else appears to be so fundamentally in contradiction to the basic canons of science. But if it were simply this, and if fortune-telling and other divinatory practices were actually far more often wrong than right, one would expect that the belief of common folk everywhere in such sheer nonsense would die out of itself. Obviously society is not counting on this, and continues to behave in an absurdly threatened manner when it comes to this particular remnant of the age of superstition.

A clue may perhaps be found in the fact that even parapsychology has a markedly phobic attitude toward the problem of precognition and has given short shrift to the only approach to it that makes the slightest semblance of sense, namely that which starts from the premise that man is able in some way to create the future. The hidden bogey here is the same as everywhere else, the dread possibility that there might be a real basis after all for the universally fantasied efficacy of the death wish. You can't open the door to one possibility without opening it to the other. Thus, when the Greek psychical researcher Tanagras (1949) made the death wish central to this theory of precognition, he soon became the forgotten man of parapsychology. It is as if a deep-lying awareness of this aspect of our involvement in events has to be walled off behind successive layers of repression and denial. Science and society--and even parapsychology--have thus arrayed themselves in massive opposition to the one phenomenon whose systematic explication, perhaps the single most important task of all science, would lead inevitably to the turning over of the most tabooed rock in human experience.

It is a curious fact that science, which in the last few years of historiographic research, has suffered a painful dethronement from its formerly believed autonomous position in the hegemony of the intellect, is beginning now through pure intellectual puzzlement to thread its way back to a view of causality and natural events that it abandoned long before the abacus. This movement away from an almost blind belief in the supremacy of logic and the intellect on the part of scientists and philosophers has begun almost simultaneously in different sectors of its wide domain as corresponding chinks have opened to readmit mind and its principal manifestation, life, into the picture. As one historian and sociologist of science recently put it, "a veritable revolution of consciousness is now under way" (Thackray 1974). An opening wedge in the new movement was the demonstration, sparked by the insights of psychoanalysis, of the role of the human unconscious in events formerly believed to be accidents of fate or the work of bacterial demons. Physics, for its part, has elaborated a quantum mechanical refinement of earlier theories of matter and motion in which the place of mind begins to appear as indispensable as it was thoroughly dispensable in the classical view [see (editor's) note 2]. And biology is rapidly beginning to realize that its primary data, from the development of living organisms to the evolution of species, is as incomprehensible without mind and a kind of goal-oriented design in the picture (the very ingredients formerly the province of the Deity) as the upside-down theory of probability it now forces into the still inscrutable role of Prime Mover. (One commentator, with rare unconscious insight, characterized the somewhat mysterious applicability of the theory of probability to natural events as "a kind of miracle, as esoteric ... as the resurrection of the dead"--Struick 1934.)

Parapsychology may never amount to much in a practical way, nor will it ever have much "cash value," as William James might have put it. But if, with the help of anthropology, it can lead the way back to a more adequate and more humanly realistic view of the world than has been provided by the classical pictures, and especially if it can lead to a more helpful view of human aggression, it will be worth all the headaches (with the exception of course of the tens of thousands of witches burned at the stake in one of society's many attempts to expel its evil) endured in its behalf.

* * *

Editor's Conclusion

This chapter provides a developed but not fully completed theory about direct PK effects in psychotherapy and in everyday life. Eisenbud had already provided one of the best documented cases ever presented for a regular PK effect a decade ago, in The World of Ted Serios (New York: Morrow, 1967). Because of the implications of this (via irregular and spontaneous PK of a lesser degree) for the fields of anthropology and medicine, the reader may find that more space is spent discussing Eisenbud's work in the remainder of this volume than in this chapter.

It is tempting to demand that the reader reread this and Walker's chapter at the beginning of Part II several times, along with all references cited in both chapters, before proceeding into the other areas. Certainly, such library research would provide a useful and stimulating course of study for graduate students in physics or medical anthropology. From a practical standpoint it will suffice for the reader to have a general knowledge of both chapters and understand the essential relationships between the two. Eisenbud shows how the PK mechanism may appear directly in psychotherapy, medicine, and anthropological field work. Walker provides a mechanistic explanation for PK. Observations of psi in medical anthropological field work should in the future be made within the theoretical and operational frames provided by these two chapters.

Notes

1. There has recently been considerable attention in the anthropological literature to the problem of aggression, some of it (Montagu 1973) stirred up by the speculations of non-anthropologists Ardrey (1966), Lorenz (1966), and Morris (1968). The crux of controversy in this discussion has been the question of whether aggressive behavior is the expression of innate, genetically determined needs or whether it is mostly or entirely learned behavior (and by this is meant, of course, culturally learned behavior). Neither side in this almost futile controversy seems aware of the tremendous role of intrapsychic tensions bred within the family, specifically of the role of the mother-child relationship, in altering thresholds that are clearly both genetically and culturally conditioned and in determining symbolically potent target images. Significantly, while the Ardrey-Lorenz-Morris variants of the "naked ape" hypothesis provide a modern version of "the Devil made me do it" projection ("It wasn't I, it was my genes"), their critics in this controversy tend to make

of aggression something that can be unlearned the way simple social prejudices can. The idea of unconscious reservoirs of aggression, as locked away from ordinary rational persuasion as volcanoes but still not as unalterable as purely genetically determined behaviors, has not taken hold. --J. E.

2. Physicists have recognized a probable relationship between paranormal phenomena and quantum mechanics almost since the inception of the latter (Koestler 1972; Hardy, Harvie, and Koestler 1975), and parapsychologists have recognized the ultimate necessity for the same relationship to complete an acceptable physicalistic explanation for psi (LeShan 1969). But the exotic, nebulous, other-worldly nature and similarities of the two fields have been relatively fruitless except as interesting subjects for theorizing, speculating, and fantasizing. It was not until Walker's integration of the fields of brain physiology, probability theory, quantum mechanics, and parapsychology, as summarized in the present volume, that we have had any real and demonstrable relationship between quantum and paranormal variables. --J. K. L.

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An Anthropological Approach to DIFFERENT TYPES OF COMMUNICATION AND THE IMPORTANCE OF DIFFERENCES IN HUMAN TEMPERAMENTS

Margaret Mead

Editor's Comments

Margaret Mead has been intimately involved in development of parapsychology, as a member of the Board of Trustees of the American Society for Psychical Research as early as 1943 and as a proponent of the formal recognition by the American Association for the Advancement of Science of paranormal phenomena as legitimate subjects of scientific investigation. (This recognition was granted by the Association by vote in 1969.) To my knowledge, she has never said that parapsychology is "good" or that anthropologists (or others) should make it a point to study psi, but only that psi appears to be as legitimate a subject of scientific investigation as any other, as evidenced by the enormous numbers of careful investigations which followed the demanding techniques of J. B. Rhine's and others' work. To officially refuse to study psi or to label such phenomena as non-real, her comments suggested, is to indicate that psi must exist. Not only that, but psi would take on the joint auras of danger and glamour. Thus, psi in relation to science strongly resembles taboo as described for primitive peoples--something so potent that one must avoid contact for fear of being harmed.

Mead's chapter reiterates this theme and makes some new but related observations. Parapsychology itself has become increasingly inbred and self-sufficient -- in diametric opposition to anthropology, which has traditionally grown and developed by interdisciplinary extensions into and borrowing from other fields. Dr. Mead is too polite to put this into such terms. But she has made some cogent observations about what we may expect if we develop a specialty or "school" of "parapsychological anthropology" (Wescott will later argue just as cogently that the field of "paranthropology" already exists, albeit more by virtue of the special labeling of observed events than by any school of thought which presumes to relate psi to culture in any systematic way).

I believe the danger Mead sees relates to the development (and demise) of the field of "psychedelic anthropology" which developed alongside the extensive use of LSD and marijuana in the 1960s. The literature which arose from this, of which Castaneda's is a late and somewhat different segment, seemed at first to contain the hope of new universal explanations which would advance and also simplify our understanding of all human behavior. After more than a decade of this we can see that we are no nearer such universal solutions than before, and much of the literature on hallucinogens is so wrapped up in the drugs (and their use by anthropologists) that we are often no more the wiser about the cultures in the context of which the psychedelics are used. I must agree with Mead's warnings, then, in hoping that our studies of psi never become so self-sufficient, so removed from the concept of culture, that they become centered on providing "proofs," "beliefs," or a focus on the study of psi phenomena at the expense of our better understanding of human behavior in general.

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I do not think that the attempt to isolate, label and explore an entity called a "psi" phenomenon is either useful or necessary. Rather, it would be more fruitful to continue the usual openness of approach which has characterized the field of anthropology since field work began. Indeed it has been a truism about anthropological research that willingness to accept forms of behavior which seem unbelievable until well described has been a necessary characteristic of the good field worker, just as scepticism has been an occupational hazard for the psychologist attempting to validate his credentials as a scientist and not a philosopher. But if the study of different and less recognized forms of human communication is labeled as either belief or disbelief, and if the anthropologist is accused of refusing to be open-minded to what he encounters in the field, then a whole false position is established.

Unfortunately this field of research has been plagued by a search for true believers, by accusations of wicked, unreceptive scepticism, and by various obfuscating notions, the more pernicious of which are subsumed under such labels as "extrasensory" instead of "other sensory" perceptions, or discussions of the "paranormal." Terms like "extrasensory" and "paranormal" exclude scientific research rather than invite it. Either we are attempting to extend our field of research into human sensibilities and capacities by scientific means, or we are stating that there is a set of phenomena which should not be studied by scientific methods at all. The attempt to have it both ways leads to obfuscation at best and paranoia at worst.

Taking "psi" out of the stream of human behavior obscures such reasonable questions as: Do phenomena like telepathy or clairvoyance exist, or are they tricks of charlatans or illusions of believers? Are there special identifiable characteristics of individuals who manifest special capacities for unusual types of communication, either sending or receiving? What are the conditions under which these characteristics are manifested? Are they cultural, social, experiential? There is no reason why such questions should not be the subject of ordinary anthropological inquiry. Nor is there any reason to bring in the question of prejudice for or against the existence of such phenomena unless the question is introduced by advocates of psi who insist that these phenomena are indeed of another order and not subject to scientific research.

Consider for a moment the question of trance in Bali, where varying categories of individuals--children, old women, all the members of a village or only a single person--are specially singled out and trained to go into trance. The trance states have been well described, filmed and studied, and there is no doubt that students of hypnosis would recognize familiar features--restricted attention and sensory responsiveness, disturbed pupilary reflexes, somnambulistic behavior, amnesia. The Balinese belief system also allows for the operation of many forms of communication that could be appropriate vehicles for the kinds of communication which are grouped, in the present categorical system, as psi. Yet I have to report that in my two years of intensive work I did not encounter a single phenomenon which I could classify as psi in the sense that telepathy, clairvoyance, precognition or psi kinesis was involved. My collaborator, Jane Belo, reported one instance of divination--by a drop of oil on a fingernail--which might fall within this category.

Nor in a detailed study of mediums and trance seances among the Manus people of New Guinea did I find a single instance of "psi phenomena." The problem is that if I report these findings and simultaneously state that I believe that some individuals have capacities for certain kinds of communications which we label telepathy and clairvoyance which are not widely shared, and that sensitivities are probably born among the Manus and among the Balinese but do not appear for reasons that can be explained culturally, I will not be branded as an unbeliever. But if I make no such statement and simply report that although the belief system allows for a tremendous amount of supernaturally communicated knowledge and experience, no signs of such phenomena were observed, I would then be branded as an unbeliever who reduces all human beings to objects, etc. The cultural explanation which seems to me the most credible is that a society may so develop behaviors which would be labeled as psi and paranormal if displayed by individuals outside of ritual settings, that individual sensitives would simply disappear within a behavioral style. Or stated another way, it would be much harder to find a sensitive in Bali than it would in a modern culture where disbelief in such behaviors has been institutionalized. Any potentiality of a few individuals may be so generalized, ritualized and institutionalized that the differences among individuals may disappear. How much intensive research may be needed to find a sensitive when a whole village goes into trance, or when a whole cult group becomes healers is a matter for further exploration. But exploration should not be hampered by claims that involve belief or disbelief.

Another important difficulty in searching for manifestations of unusual sensibilities and capacities among primitive peoples where the roles of diviner, shaman, trancer, seer are institutionalized is the almost universal propensity of individuals with special "psi" capacities to armor themselves against the possible failure of the special insight or skill which has brought them to their recognized positions. It would seem from the universality which joins trickery with deep faith and receptive audience response that a certain fluctuating character in these less usual capacities has to be postulated. So the anthropologist who is studying the specialist finds he has tricks: he palms the "pains" that he extracts from the patient's body in the form of little crystals, or among modern mediums, a wet glove may be provided just in case the spirits don't come. If the research issue is stated as a matter of truth versus trickery, one piece of trickery undoes the whole. But if the question of the "reality" of the manifestation is not introduced, it is possible to analyze different degrees of self-confidence and introspective judgments of individual capacities.

Modern kinesic research, based on better and better sound and visual recording, is providing us with access to a whole continuum of communication phenomena--as individuals in a group fall into the finest synchrony, or as synchrony between a teacher and a student of one racial group may succeed, and yet between a teacher and students of another may fail. Cues once imperceptible except to the eye of the especially gifted observer can now be isolated and studied on the screen. Odors can be experimentally introduced into an environment and the responses of different individuals can be measured.

It is quite possible that the apparent breaks which are interpreted as clairvoyance or telepathy are parts of a continuum of unusual memory span or unusual cue reception, which stand out simply because the intervening types of communication are missing. It is also possible that there are genuine discontinuities between what certain individuals can do and what the rest of a given population or of all populations can do. Both are plausible hypotheses. But rigid canons of belief or disbelief will not help us to solve such problems. Science and religion are both characterized by recurrent reactive dogmatisms. This was true of the whole question of evolution in the 19th century, and is equally true of the way psi research is being approached today. When the defenders of the faith insisted they knew the date of creation, the evolutionist was pushed into a denunciation of all faith.

There is also a quite unjustified notion that we can find out more about psi phenomena by studying primitive people, simply because primitive people are found to use trance, divination, or fire walking within a belief system that accepts these as supernatural events. If we state that belief systems which dichotomize types of behavior as supernatural are equally obfuscating whether found among primitive people, Asian peoples or in Topeka, Kansas, half of the fascination with anthropology of enthusiastic seekers of "psi" phenomena would vanish. Carlos Casteneda has developed a method which makes the American Indian religious experience available to non-anthropologists who would never be able to get the same experience from reading interlinear texts. But making the Indians' religious view of reality more comprehensible to outsiders in no way proves the existence of some "separate reality." Nor is the ability of a foreigner to go into trance in Haiti or Bali, and to experience what the Haitian trancer experiences, a proof of the supernatural origins of the behavior. Scientific research is legitimized by shared, predictable and replicable types of analyses, which serve until a better paradigm is developed. Belief in atoms is not, as Dr. Walker points out, the point. Neither is "belief" or "disbelief" the point about psi phenomena. The point is whether we can find ways of studying these phenomena which will make them as accessible as the stars or chromosomes. We never will as long as we muddle up the issue with questions of belief.

* * *

Editor's Conclusion

This chapter makes several important points, two of which bear repetition for those who, by virtue of preconceived viewpoints, may overlook them on first reading. The first is very anthropologically oriented and has perhaps never been made so clearly before: if psi becomes sufficiently institutionalized or ritualized in a particular cultural system, then it may disappear as far as the investigating anthropologist is concerned. So, if psi occurs during trance, it may be invisible by comparison with televised psychokinesis in our own "culture of disbelief." The same point could be made relative to voodoo death or other forms of sorcery or folk healing (vis-à-vis our concept of the placebo effect). This represents a major problem of anthropological verification and is not one that can be solved in terms of belief or disbelief.

Mead's second point is a more general one which relates to all other chapters of this Part I. I have reviewed the spotty history of psi observations by anthropologists, the popular interest in reality concepts, and the most recent anthropological work (most of which has not formerly been published), which promises so much in terms of verified data on psi events as ordinary aspects in some cultures. Bharati has represented the currently most prevalent view, that psi simply is not believable and therefore is unworthy of scientific investigation. Eisenbud has shown that, if one simply accepts the established possibility that psi exists and observes cultural behavior, then one must conclude that psi is not only relevant to science but is in fact of gargantuan importance to our understanding of culture in general and in primitive societies in particular. Mead, in some contrast to all of these, has indicated in the present chapter that it may be quite irrelevant whether, at this stage, we can confidently say that psi exists or not: belief or disbelief is not the point. The point is that the study or observation of psi in anthropological field work can occur quite independently of one's personal world view or religious convictions. (When a person reports on the economic importance of cattle in India we do not ask if the reporter is a Catholic or a Methodist.) She might have added that the very concept of culture itself is central to anthropology but far more ephemeral than psi. Nobody has ever observed culture, but notwithstanding the vast number of learned, shared behavioral repetitions which may readily be observed to occur in any given society, only a few persons have bothered to question the fact that culture has more than a heuristic reality.

Hence, if our explaining some events as being contingent on the operation of psi provides a more suitable analytical tool for the understanding of human behavior, then we may be well advised to use it (even if we simply don't believe it). If it works, use it. This advice summarizes my overview of this part and introduces the more empirically oriented parts that follow.

Part II

The Physical Bases for Paranormal Events

THE COMPLEAT QUANTUM MECHANICAL ANTHROPOLOGIST

Evan Harris Walker

Editor's Comments

When I first witnessed what appeared to be "the paranormal" in another culture and became aware of the field of parapsychology, I remained a total skeptic. Although an avid reader in the field of parapsychology and one whose dogmatism was not as complete as that of some of my colleagues, I could not bring myself to seriously consider psi as a real possibility until 1973 when I discovered Dr. Walker's work and then presented my first paper on psi (Long 1973). At that time I determined that if I ever published materials about psi, considerable reference would have to be made to this work.

The principle involved was a simple one which has confronted many scientists who recognize psi as statistically established and yet who fail intuitively in their judgment: it is (at least psychologically) aberrant for a scientist to accept a principle which has no plausible physical explanation. Walker's work alleviates the need to reject the psi principle on grounds of inadequate physical examination.

There remains a problem of whether the reader can understand quantum mechanics sufficiently to believe that the principles have been established. In my case, with a smattering of calculus, physics, and neuroanatomy, I can only follow this work up to a point. But to that point, I recognize the work to be valid and totally logical: I think I can see what Walker is doing, even though I cannot understand each element of the mathematical proofs. Therefore, I accept his approach, and the proofs comprise part of my personal gestalt regarding psi. I am even so bold as to summarize my view of the work following his chapter.

Walker's previous publications have been exceedingly technical and at times piecemeal. This chapter brings the previous work together and presents it with as little emphasis on the technical as I believe is possible without losing the essential impact as a quantum mechanical analysis.

* * *

Introduction

The search for meaning to man's life is among the most fundamental of man's pursuits. It has spawned both religion and science. Science, or rather its creed, is a religion in search of ultimate truth and meaning. And the anthropologist is an adherent to that creed, a member of that culture who searches for his own significance in the study of man.

But it should be clear that if the anthropologist's creed rejects a basic factor of man's nature, much of the work of the anthropologist must fail to be meaningful. If what is rejected by that creed is essential to man's nature and central to his cultures, the efforts of the anthropologist will not have significance.

If the anthropologist observes the aborigine dancing about and assaulting the bush, weapon in hand, or the military technician pressing the small red buttons of his sophisticated equipment, he may describe what he sees. But if he does not know whether these acts are performed in ritual, in rehearsal, or in reality of combat, he cannot say he has comprehended the meaning. You may observe the religious rituals of cultures, study the belief systems, but if you do not know whether the phenomenon on which it draws its strength is real, if you do not know whether the paranormal occurs, you will not achieve understanding of this most central point of the culture's significance. And the nature of man will elude you as well.

If the chemist could not acknowledge the reality of atoms, or if he could not first resolve this question, he would not achieve significant scientific development. But today the question, "Do you believe in atoms?" is quite meaningless in science. A firm experimental and theoretical understanding of the atomic nature of matter has been established. Atoms fit into the paradigm of science, they fit the creed. The purpose here is to show that the development of parapsychology and paraphysics has now reached that level. These fields now provide experimental proof, a theoretical model, and a paradigm--a new and more satisfactory paradigm--embracing these observations and this theory within the body of science to resolve the difficulties not only of psi-phenomena per se, but of those questions encountered in the measurement problem of quantum theory. These facts will cause basic changes in our outlook in many fields, including physics, biology, psychology, and anthropology.

The following discussion of psi phenomena and presentation of the theory[1-8] that lays the scientific foundations for paraphysics and parapsychology is taken from a talk given at Johns Hopkins, November 6, 1974, and at the "Quantum Mechanics and Parapsychology" meeting held in Geneva, Switzerland, August 26-27, 1974. This material serves to demonstrate that experimental data have been developed to show the existence of the phenomena, a theoretical structure with a mathematical formulation and full compatibility with physics has been achieved, and a new scientific paradigm now exists.

Considerable new interest has been directed to recent experimental and theoretical developments in this field of parapsychology and paraphysics. Recent events begin with the acceptance of the Parapsychology Association as an affiliate of the American Association for the Advancement of Science, government-supported research conducted at several laboratories, the Geneva meeting on quantum mechanics and parapsychology,[8, 9] the publication of the Stanford Research Institute's report in Nature,[10] and the Proceedings of the Institute of Electrical and Electronics Engineers.[11]*

What I wish to do here is outline the experimental contributions to our knowledge of psi phenomena with particular attention to the physical characteristics that have been developed by patient research over the past 50 years of sound scientific laboratory work, present the recent contributions to this experimental effort and then present the theoretical equations and applications which, for the first time, bridge this vast phenomenology to the main body of scientific knowledge.

But I can hardly expect you to accept me as a proper authority on this subject before I show you my "credentials." In 1971 I had the exceptional experience of presenting a talk at a rather large meeting of the Students International Meditation Society (SIMS), a "front organization" for the Maharishi Mahesh Yogi (MMY). As one might expect the MMY is an esthetic mystic who sits on a deerskin, burns quantities of musk-flavored incense, and speaks about the beauty of how the sap rises in the flower. (The MMY is a sincere and impressive holy man; the levity here should not be taken to imply otherwise.) On my return to my office and after about two weeks had elapsed, I was phoned by a close associate of the MMY, a SIMS functionary, concerning a write-up of my talk for publication. When I hung up the phone, the office suddenly was filled with the strong odor of musk incense. Of course I was not perturbed too much by this since I am aware of the psychological factors that can cause one to re-experience characteristics of past events. As I was rationalizing on this point, my office mate, a Russian immigrant by the name of Serge Zaroodny, entered and instantly asked, "What is that odor? Who has been burning incense?" The whole affair struck me as being quite amusing and certainly odd. If I had been an experimentalist, I would have rushed to make confirmatory measurements. Instead, I simply laughed and annoyed Dr. Zaroodny by not answering his question. Such occurrences are not rare in the population. But their significance can only be determined by laboratory experimentation.

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*The IEEE report by Puthoff and Targ omits reference to work[1-5] giving Walker priority for the quantum mechanical theory of psi phenomena and for a detailed theory[6,7] to connect consciousness, brain functions, and quantum mechanics.

Let us turn now to serious experimental data. I should state first that an impartial investigator has great difficulty in approaching the subject of parapsychology. One's credulity seems continually and progressively to be challenged. One goes from telepathy--like a mental radio--which, in light of modern technology, is not difficult to accept, to clairvoyance, very unlikely, but not obviously impossible if one thinks of the capabilities of a coherent wave radar (laser radar). But as one goes further into the literature, precognition, psychokinesis and more recently things like the "Direct Mind Action" (DMA; of the sort encountered in Uri Geller) are advanced as valid. Certainly, not all the phenomena reported in popular articles are to be considered valid, but there is an extensive body of sound laboratory results that include phenomena truly incredible. Our difficulty in assimilating these phenomena into our understanding--the difficulty in accepting the results of numerous laboratory experiments--is traceable to clear physical principles. These will be discussed below.

Let us turn to the recent report[10] by Dr. Puthoff and Mr. Targ of the Stanford Research Institute, published in Nature. Preliminary[9] testing of Uri Geller showed that he was able to draw pictures almost identical to target pictures sealed in envelopes. The envelopes were not handled by Geller. Contents could not be discerned when placed in front of a photo flood lamp. In many of these cases the results are nearly as good as if Geller were copying the picture. Indeed, he states that he mentally sees an image of the target. However, these results did not clearly rule out sensory information beyond all question, since the contents were known to persons present. As a result a second series of experiments were conducted involving a complete separation of Geller from the target. Geller or the group selecting the target would be isolated in a shielded room. The plan for these experiments is shown in Table 1. Shielded Room 1 used in experiments 1-10 of Table 1 is a Stanford Research Institute room used for EEG research which provides acoustic and visual isolation; Room 2 is a copper-screen Faraday Cage providing 120 dB attenuation for plane wave radio frequency radiation from 120kHz to 1GHz. For Magnetic fields the attenuation is 68 dB at 1kHz and decreases

(cont. on p. 60)

Table 1 Remote perception of graphic material[10]

Experiment	Date	Geller Location	Target Location	Target	Figure
1	8/4/73	Shielded room 1*	Adjacent room (4.1m)†	Firecracker	1a
2	8/4/73	Shielded room 1	Adjacent room (4.1m)	Grapes	1b
3	8/5/73	Shielded room 1	Office (475m)	Devil	1c
4	8/5/73	Room adjacent to shielded room 1	Shielded room 1 (3.2m)	Solar System	1d
5	8/6/73	Room adjacent to shielded room 1	Shielded room 1 (3.2m)	Rabbit	No drawing
6	8/7/73	Shielded room 1	Adjacent room (4.1m)	Tree	No drawing
7	8/7/73	Shielded room 1	Adjacent room (4.1m)	Envelope	No drawing
8	8/8/73	Shielded room 1	Remote room (6.75m)	Camel	1e
9	8/8/73	Shielded room 1	Adjacent room (4.1m)	Bridge	1f
10	8/8/73	Shielded room 1	Adjacent room (4.1m)	Seagull	1g
11	8/9/73	Shielded room 2‡	Computer (54m)	Kite (computer CRT)	2a
12	8/10/73	Shielded room 2	Computer (54m)	Church (computer memory)	2b
13	8/10/73	Shielded room 2	Computer (54m)	Arrow through heart (computer CRT, zero intensity)	2c

*EEG Facility shielded room (see text).
†Perceiver-target distances measured in metres.
‡SRI Radio Systems Laboratory shielded room (see text).

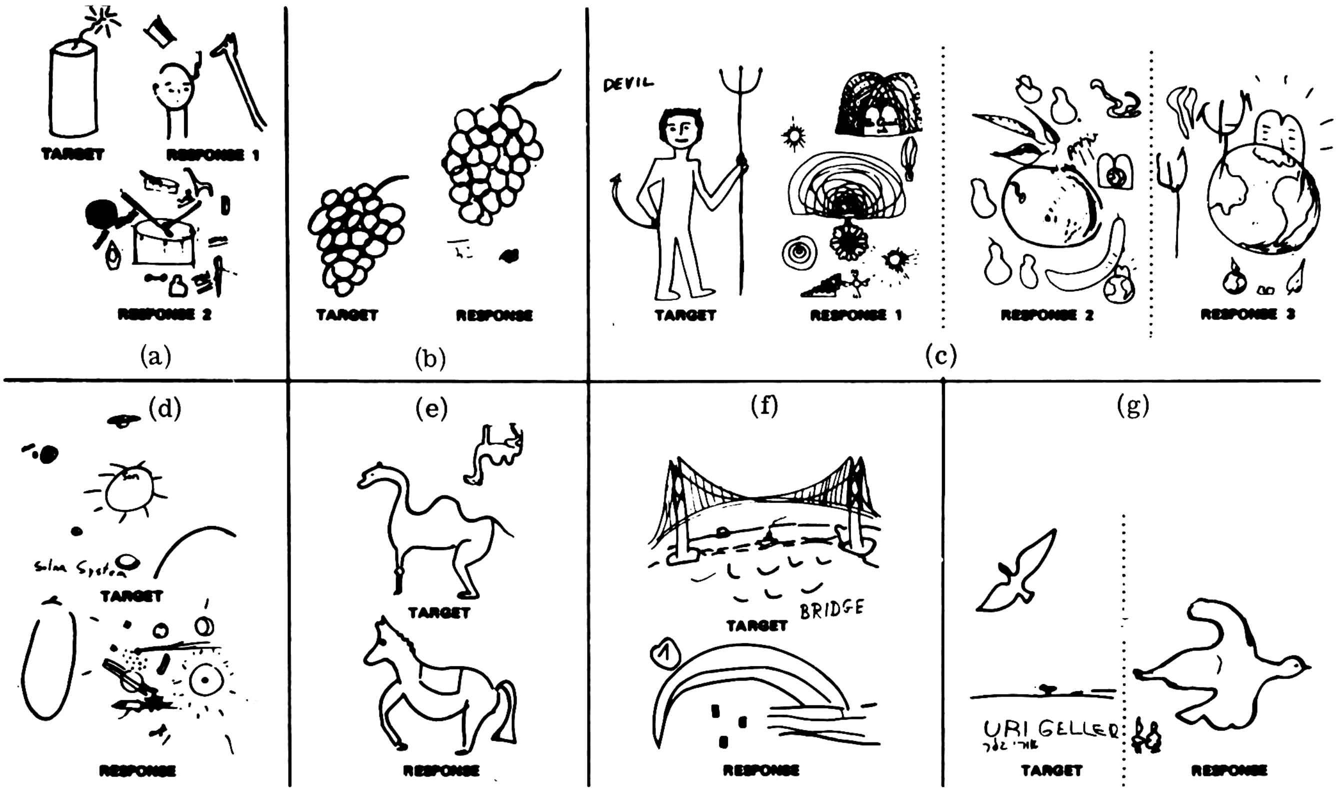
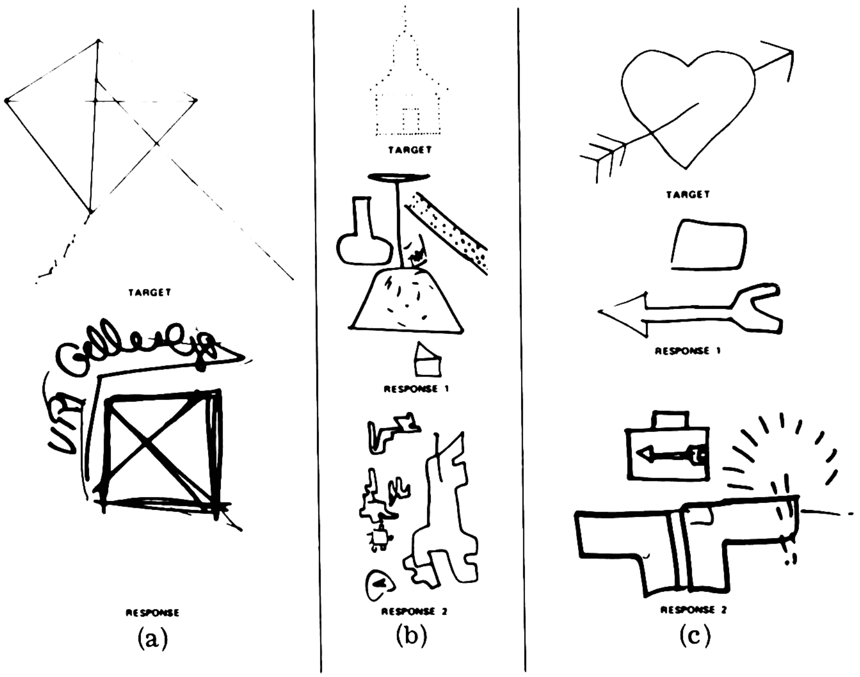

TARGET
RESPONSE 1
RESPONSE 2
(a)
TARGET
RESPONSE
(b)
DEVIL
TARGET
RESPONSE 1
RESPONSE 2
RESPONSE 3
(c)
(d)
Solar System
TARGET
RESPONSE
(e)
TARGET
RESPONSE
(f)
BRIDGE
TARGET
RESPONSE
(g)
URI GELLER
TARGET
RESPONSE

Fig. 1. Target pictures and responses drawn by Uri Geller under shielded conditions.[10]



(a) (b) (c)

Fig. 2. Computer drawings and responses drawn by Uri Geller: a. computer drawing stored on video display; b. computer drawing stored in computer memory only; c. computer drawing stored on video display with zero intensity.[10]

to 3 dB at 60Hz. Figure 1 shows Geller's responses together with target figures for trials 1-4 and 8-10. Figure 2 shows three additional trials in which the targets were (1) displayed on a cathode ray tube (CRT); (2) stored in the computer's memory, and (3) CRT display at zero intensity.

These targets and responses were submitted to two Stanford scientists for judging on a blind basis. A perfect match for these ten pictures and groups of responses was obtained. The probability for perfect match by chance is 2.76×10^{-7}.

Another test these researchers conducted employed a single die placed in a steel card file box. The box was shaken, Geller made his call and the box was opened. Geller achieved eight out of eight tries. The chance probability for this result 5.95 x 10^{-7}. An additional clairvoyancy-type experiment was conducted with a retired police chief named Mr. Pat Price. The experiment indicated that he was able to relate visual, auditory and tactile information concerning a distant and randomly selected target location not previously visited. The description indicates a high data rate channel can be established in some cases of ESP.

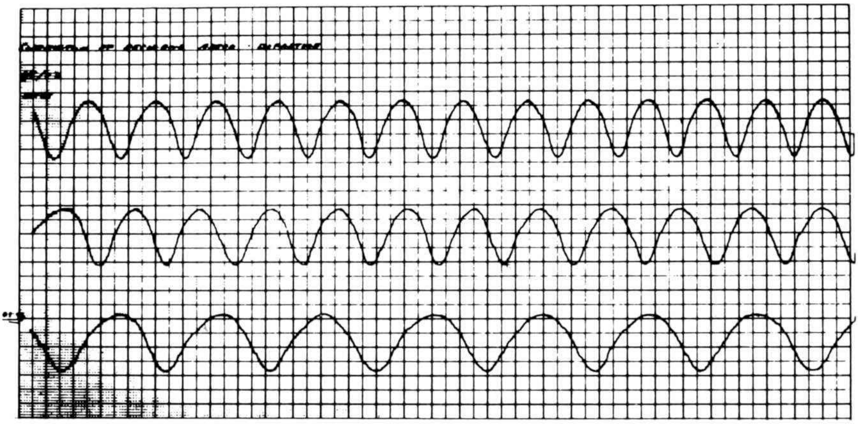
The Institute researchers did observe[9] several PK effects produced by Geller as well as others although this subject was not dealt with in the Nature article.

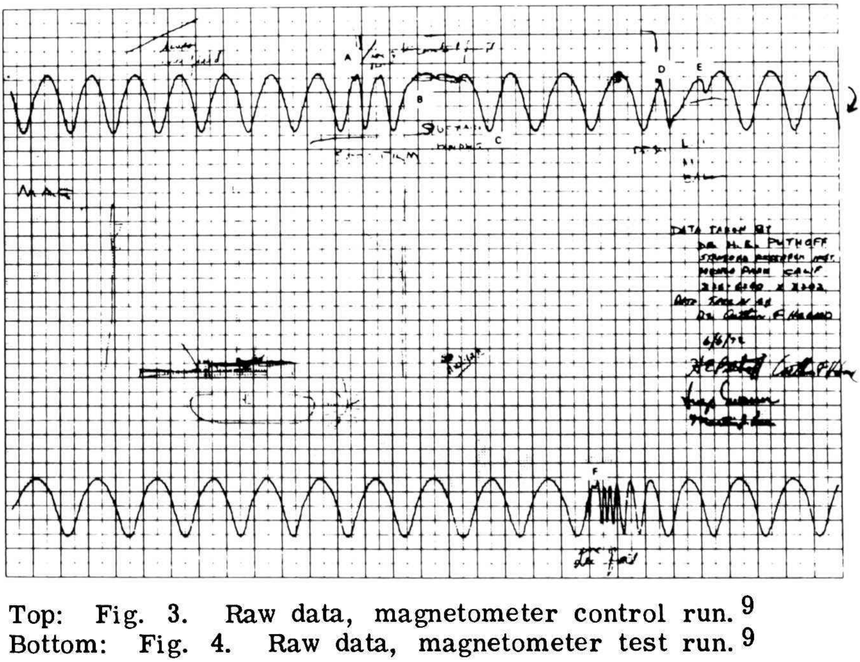
A most significant experiment was performed at Stanford University using an artist, Ingo Swann.[9, 12] A magnetometer, part of the physics department's equipment designed to search for the so called "quark" particles, was used. This magnetometer has μ-metal shielding, an aluminum container, copper shielding and a superconducting niobium shield. These shields provide extreme isolation from external physical effects. In normal operation this device produces a damped sinusoidal output as shown in Figure 3. With Ingo Swann present the output was altered as shown in Figure 4. Four modifications occurred, correlated with efforts by Ingo Swann to probe by "mental visualization" the interior of the device or "to hold the trace."

A later experiment at Stanford Research Institute was conducted using a commercial superconducting second derivative differentialing magnetometer. Mr. Pat Price was used as the subject. He was given a random sequence of off-on instructions. The object was to effect a change in the magnetometer output during the time interval correlated with the instruction. Figure 5 shows the result for a typical 10-trial sequence in the total of 13 runs. Overall significance of the results was placed at the 0.004 level.

Professor Gertrude Schmeidler (Psychology Department, City College, City University of New York) has run experiments with Ingo Swann, using thermistor outputs as the target variable, with significant results.[13] The thermistors were contained in Dewar flasks which prevented ordinary thermal fluctuations.

Professor David Bohm, together with a number of other distinguished observers, has tested Uri Geller more informally. He reports in an as yet unpublished paper that Geller was able to produce PK effects.





Top: Fig. 3. Raw data, magnetometer control run.[9]
Bottom: Fig. 4. Raw data, magnetometer test run.[9]

Nevertheless, these results, by and large, are not unique. Researchers such as Rhine, Pratt, and Osis have for many years investigated the problem, obtaining over and over results which are clearly significant, scientifically valid, largely repeatable, and manifesting unique characteristics. Let me list some of these characteristics. For this listing I borrow from an address[14] given by Dr. Schmeidler which points up the fact that these characteristics are widely recognized as properties of the phenomenon:

1. Experiments indicate both a spatial and temporal independence of the phenomena. (This is quite different from the character of potential or force fields.)

2. Both extrasensory perception and psychokinesis exhibit a statistical character; certain characteristics of information theoretic properties have been tested such as signal-to-noise enhancement with positive results.

3. ESP and PK require a sentient participant or observer; these observers interact with physical systems in a manner distinct from other, physical interactions.

4. Telepathy involves the information-like coupling of two observers.

5. Extrasensory perception is not attenuated by physical barriers. Evidence to data indicates no correlation with field effects.

This list is not complete, but contains those items bearing the most striking similarity to characteristics of quantum mechanics as encountered in the so-called measurement problem.[3, 4]

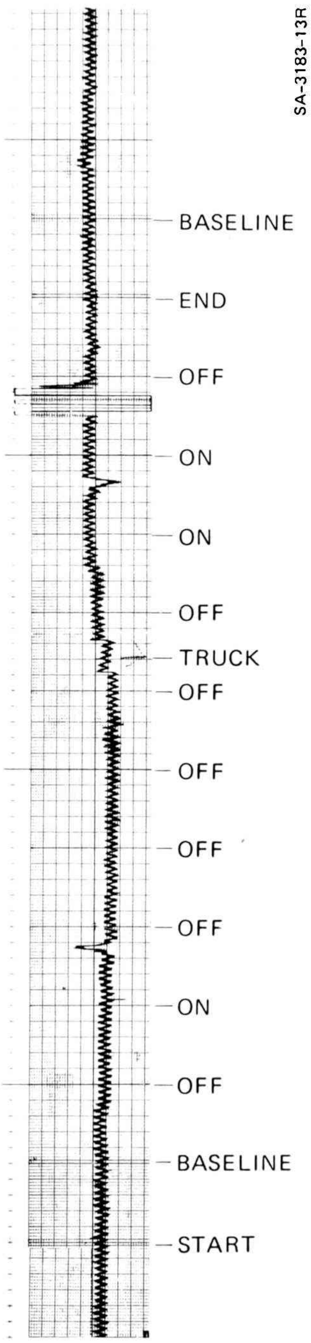


Fig. 5. Gradiometer data.[9]

Present Scientific Attitudes

Despite this wealth of experimental evidence, this vast field of study has not been accepted by scientists in general. It is my belief that it has not been accepted because there has existed no scientific hypothesis for the phenomena that would allow them to be incorporated into science. These phenomena appear particulary at odds with physics. I will present what constitutes a fully satisfactory way to approach this problem within the present framework of physics. Let me first comment on a point raised above, that the strange character of these phenomena should be anticipated simply by consideration of the basic equations of physics. Almost all phenomena encountered in our daily lives and most all scientific and engineering problems are dealt with by expressing the space-time configuration of field sources; that is, the positions and velocities of physical bodies together with the forces acting between them. But if we get outside that domain, as in the theory of relativity, we encounter the quite unusual phenomena concerning the effect of physical bodies on the metric--or space and time--which includes space contraction and time dilation and even reversal. The equivalence of mass and energy has become such a commonplace idea that many have forgotten why it originally caused such consternation. Energy is simply a measure of the motion or potential motion of a body. The idea that a material body consists simply of energy appears to tell one that bodies are simply motion or propensity for motion--seemingly violating the primacy of physical reality.

Solutions to the basic equation of quantum mechanics, the Schrödinger equation, include such phenomena as the passage of a body through a barrier which classically is impenetrable. But the truly odd character of quantum mechanics only comes out when we deal with both the Schrödinger equation and that equation which introduces its probabilistic character (called the Copenhagen interpretation of quantum mechanics), such as questions concerning the wave/particle duality of matter.

But it is only rarely that we are forced, in physics, to be concerned with the full implications of the Copenhagen interpretation of quantum mechanics. Most all problems involve simply the specification of the particle field interactions, with the quantum mechanical formulation serving as a mathematical crank to grind out answers. But when the state vector itself comes into play, when we are forced to look at that second equation, that Copenhagen interpretation, the world looks quite strange. There all events are robed in the attire of the "paranormal."

The Measurement Problem in Quantum Mechanics

As mentioned, both the Schrödinger equation and the Copenhagen (or probabilistic) interpretation (expressed as an equation) are basic equations of quantum mechanics. The Schrödinger equation is a deterministic prescription for the development of Ψ (called the state vector, see below) with time, given the appropriate boundary conditions. The second equation only enters when the system is subjected to measurement or observation. Thus when we introduce an observer to a system that is properly described quantum-mechanically, we should expect the possibility of some observer effect. We should not be quite so disposed to discover phenomena that do not fit into the customary role developed to deal with field interactions. We will see below that the characteristics of psi-phenomena exactly mirror the properties of the state vector Ψ.

Let us now consider the measurement problem of quantum theory in some detail. In classical mechanics the solution to any physical problem yields one solution, or "state," if all the boundary conditions are specified. In quantum mechanics, however, many states are possible. No physical condition or restraint exists to cause a single state that the system will be found in when a measurement is carried out. As a result, until a measurement is carried out, the system is properly described by a state vector, which is the linear combination of all possible states of the system. For example, a radioactive atom can in many cases decay in more than one way. Starting with atom A, after an interval of time, this atom may have decayed into an atom of type B, or C, or it may not have decayed. Thus the proper state vector is the sums of the separate state descriptions for A, B, and C collectively. Only after a measurement is performed can one state that the atom was in state A, or B, or C. Before the measurement it is in all three collectively. This view of physical reality is entirely at odds with our commonsense conception of the physical world, but this is the correct picture of reality.

Once we understand the concept of a state vector representation of a physical system or event, we must then ask the question, what constitutes a measurement? Von Neumann[15] showed that any interaction used to determine that state of the atom was also analyzable in terms of an overall quantum system. Thus, the entire system, including any measurement apparatus, would be expressible in terms of a linear combination of states. This regression of the problem could be carried all the way to the observer. As a result, the characteristic of an observation is that it incorporates a conscious observer (or at least some apparatus not analyzable as part of any physical system, and thus having some "extra" physical characteristics, to bring about state vector collapse).

This interpretation of the basic equations of quantum mechanics is referred to as the Copenhagen interpretation. In this interpretation a system will exist simultaneously in all states--the linear combination of states--until an observer (or apparatus outside the system) interacts to "collapse the state vector." This interpretation is the accepted standard in physics, although many physicists, wishing to avoid the obvious anthropocentricity, frequently play down the role of the observer.

Quantum Mechanics and Psychokinesis

Much more can and has been done to carry this matter forward. However, this is a good place to introduce the preliminary treatment of paranormal (or psi) phenomena. Consider, for example, a PK experiment such as Schmeidler's with Ingo Swann[13] to effect temperature changes in thermistors. The output of the thermistor can be treated formally in terms of the properties of the metals, the contact potentials, and the behavior of the electron gas by writing and solving the appropriate Hamiltonian in the Schrödinger equation. That solution would include all possible outputs from the thermistor, including both abnormally high and abnormally low values, with probabilities of occurrence that are correspondingly high or low. In the Copenhagen interpretation, the act of observation is involved in an essential way with the state selection (i.e., collapse of the state vector), yielding a reading for the thermistor. The observer is thus tied into the ultimate aspect of the phenomenon that determines the probabilities described by quantum mechanics. That ultimate aspect is the state selection. Therefore, we may anticipate the fact that the observer can bias the probabilities. The condition of the observer should be capable in some way of eliciting a corresponding state selection.

Another example is the displacement of a physical object by an individual without coming into contact with the object. The reality of this phenomenon is perhaps more generally doubted than any in all the literature on paranormal phenomena. Yet it is the easiest to deal with in terms of quantum theory. I have seen a television monitor of an experiment with Uri Geller conducted at Stanford Research Institute in which he appeared to have achieved this, but the conditions were not sufficiently stringent to be able to state this as fact beyond question (as Dr. Puthoff of the Institute recognizes). There are also a number of filmstrips purporting to exhibit this phenomenon. While the evidence is not conclusive, the reported phenomenon is useful for illustrative purposes here.

In quantum theory[16], *exact position as an innate property of an object is not a meaningful concept*. This fact is one of the important consequences of the Heisenberg uncertainty principle. This principle holds that while one can make a measurement to determine *either* the location *or* the motion (actually, momentum) of an object to any degree of accuracy at the instant of the measurement, one cannot measure both precisely. The more accurately one measures the position of an object, the greater the uncertainty in its velocity; the more accurate the measurement of its velocity, the greater the uncertainty in its position. While these facts are well known quite outside physics, their major significance is frequently overlooked.

Simultaneous and accurate measurement of both position and velocity is necessary to establish the *path* of a body between measurements. If the Heisenberg principle holds generally, then no physical interactions can exist in nature that depend on the path of an object. Remember, measurement ultimately depends on some kind of physical interaction to detect such things as position and velocity; measurement is simply a physical interaction that we observe. Since Heisenberg's uncertainty principle states that exact measurements to establish path cannot be made, no physical interactions can depend on path and the idea of *innate* position can have no physical meaning. One can only speak of probable position.

These facts led to Heisenberg's formulation of quantum mechanics, * a description of nature that does not contain

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*Heisenberg's matrix mechanics predates the mathematically equivalent wave mechanics of

(continued on next page)

the concept of path. Instead this new mathematics of the behavior of objects treats bodies as though they follow all possible paths, as though they were spread through space at any time between observations. In this description we discover that the object can actually interfere with itself moving along an alternate path, almost as though the object bumps into itself.

The fact that innate position is not meaningful has many observable consequences and practical applications. The tunnel diode, an electronic device, works on the principle of quantum mechanical tunneling in which electrons "pass through," from one side of a barrier to the other side of the barrier, without going around the barrier and without being within this barrier that is otherwise impenetrable to the electrons. The electrons are able to do this because of this innate uncertainty as to where they are.

It is for these reasons that exact position as an innate property of objects fails to have meaning. We can only speak of the probability of given positions.

The magnitude of positional uncertainty is quite small generally, although there is a finite probability that the actual location of the object, upon measurement, will be significantly displaced from the position noted at any prior measurement. The process of measurement, or observation, plays

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Schrödinger. Although wave mechanics is mathematically simpler, the Heisenberg formulation is formally more elegant and more compatible with the present theory of psi. The Heisenberg formulation depicts alternate solutions as states in Hilbert space. Any one state is potentially like our ordinary physical space, but Hilbert space contains many of these possible states, many alternative states. Although the Heisenberg picture is difficult to visualize, it is easier to speak of state selection in psi phenomena than to use the language of wave mechanics, which would require us to speak of shifting the phase of the wave function. The wave picture employs the idea of coherence in explaining the process of measurement. The coherence language used in a single space formulation leads to the impression that beyond the range of that coherence the system exists in a single although unknown state rather than a combination of states. It yields a rather convincing although formally erroneous picture in which measurements and state selection are depicted as occurring automatically without the observer.

a role in the determination of the magnitude of this displacement. The observer is the unique ingredient in the measurement process which otherwise, as we have noted above, is simply an interaction like any other physical interaction. Only when we speak of a measurement, an interaction that also involves an observer, do we encounter the unique situation in which quantum theory allows us to place meaning on the location of the object. Thus in some way the observer is linked to the transition from probable position to exact position. If the observer can bias the probabilities, he can control state selection. Control of the collapse of the state vector sufficient to achieve physical displacement of the object is quite large* and as we will see below the occurrence of this phenomenon should be expected to be rare.

Again, in the case of ESP experiments, in a manner to be discussed, the overall system involves quantum mechanical processes in an essential way. As a result, the overall state vector describing the set of calls made and the set of targets is a linear combination of all possible calls and all possible targets. On observation, i.e., checking the calls against the target list, a state is selected. There exists the possibility that this act of observation affects the probability of selection of low probability states. By state selection, one causes the occurrence of that state in which there exists a high correlation between targets and calls.

The above discussion is superficial. To make it rigorous we must detail the nature of the mechanisms involved. We must show how observation as such enters into the selection of states, i.e., state vector collapse. This involves developing an extension of the Copenhagen interpretation and it requires that we consider the problem of the so-called hidden variables in quantum mechanics.

Hidden Variables

Professor David Bohm is the author of one of the most widely used textbooks[16] in quantum mechanics; he has also conducted experiments with Uri Geller with positive although not fully conclusive results.[17] In 1952 Professor

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*Measured in terms of the number of bits of information required to specify the low probability state in which the object would be found displaced over the much more likely state in which the object remains where last observed.

Bohm wrote two articles[18] on hidden variables in quantum mechanics which has led to a large number of papers on the measurement problem. Bohm's position was that an interpretation of quantum mechanics is possible in which so-called hidden variables act to determine the development of the quantum mechanical system. Bohm had in mind that a new theory introducing new (presently hidden) variables operating at a scale of 10^{-13} cm or less could lead to a new quantum mechanics not involving the assumption that simultaneous states have reality. He had in mind originally that these hidden variables would prove to be observable and dynamic. Such hidden variables would mean that a physical system is always in a single state, albeit an unknown one--much like the situation one encounters in thermodynamics. In thermodynamics, systems are described statistically but this statistical format is an artifact introduced to allow one to ignore a large number of dynamical variables by averaging over them. Von Neumann[15] had already shown that this could not be achieved for quantum mechanics by any theory in which the *simultaneous reality* of *all states* was excluded from the theory. Such theories are called *dispersion free* theories. Subsequent papers[19-25] have improved on von Neumann's work to show that no dispersion-free formulation is possible without making quantum mechanics as presently treated grossly false experimentally. Notable among those who have shown this to be true and who represent the opposing camp of staunch supporters of the Copenhagen interpretation, is Professor Piron of the University of Geneva. I met Piron at the Quantum Mechanics and Parapsychology meeting in Geneva in August 1974. It is perhaps significant that noted members of both camps concerned with the measurement problem in quantum mechanics have become interested in psi-phenomena and have expressed the opinion that a relationship may exist between quantum mechanics and parapsychology.

Two thought experiments have played an important role in the literature on the measurement problem. First the double Stern-Gerlach experiment has been discussed extensively by Wigner, a Nobel laureate in physics.[26] This experiment shows that there is a real and experimentally testable difference between the linear combination of states formulation of quantum mechanics--in which all possible states of the system exist together and simultaneously as potentialities of the system--and the so-called mixture of states in which the system while actually existing in only one unknown state is treated as being in one or the other but not both states (see Figure 6). The completely disper-

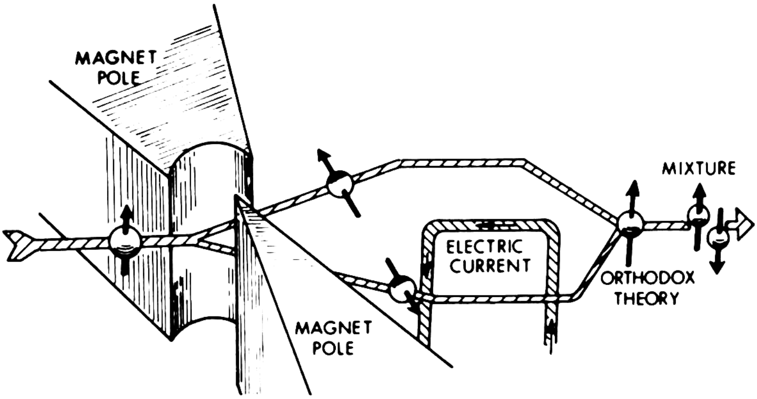
MAGNET POLE
MIXTURE
ELECTRIC CURRENT
ORTHODOX THEORY
MAGNET POLE

Fig. 6. Double Stern-Gerlach experiment (after Wigner[26]). A beam of neutral particles having magnetic moments aligned up passes between the poles of a magnet resulting in a realignment of the magnetic moments horizontally. According to conventional logic any single particle is then aligned either right or left. According to quantum mechanics each particle must be described by both possible states--both right and left. By recombining the resultant beam using a current loop to produce the appropriate magnetic field as shown, it is possible to test which theory holds. Present evidence indicates that the orthodox theory, not conventional logic represented by the mixture (sometimes up, sometimes down) is correct.

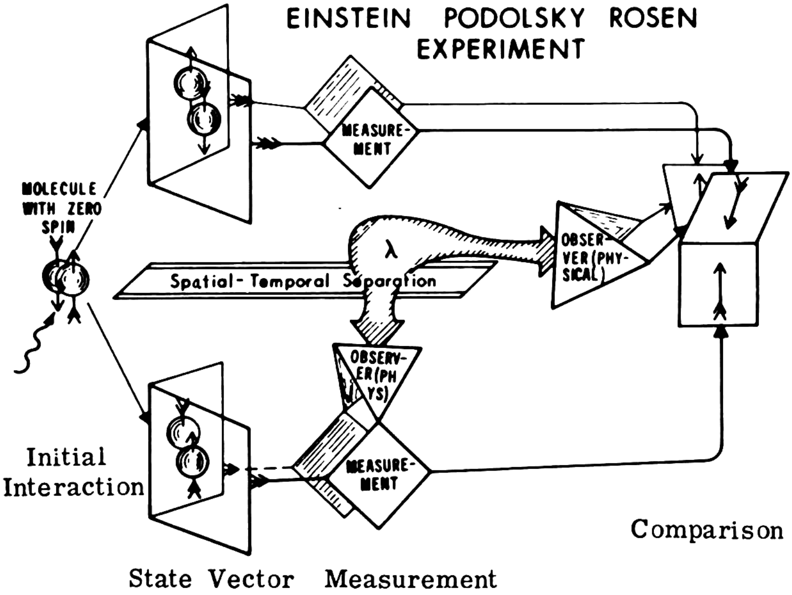
EINSTEIN PODOLSKY ROSEN EXPERIMENT
MEASUREMENT
MOLECULE WITH ZERO SPIN
λ
Spatial-Temporal Separation
OBSERVER (PHYSICAL)
OBSERVER (PHYS)
Initial Interaction
MEASUREMENT
Comparison
State Vector Measurement

Fig. 7. Schematic of the Einstein Podolsky Rosen Experiment (hidden variable interpretation). An initial interaction with a molecule breaks the molecule into two separate atoms such that the total spin is zero (one up, one down), but such that each atom must be represented by both possible orientations. The double Stern-Gerlach experiment can be used to prove that both states must be present for each atom. If a measurement is carried out on one atom which gives the spin up result, then regardless of separation, when the second atom is observed, it must be found in the down state. The hidden variable, c_i, constrains the result regardless of separation. One can envision that if the initial interaction were a card-guessing ESP experiment, the c_i could in the same way constrain the results to achieve agreement despite separation.

sion-free formulation in terms of hidden variables is not possible. However, it has been shown by Mackey and others[19-25] that an approximate dispersion-free formulation is allowed and the new formulation that I have proposed is of that type. The second thought experiment is the Einstein-Podolsky-Rosen Experiment (EPR).[27] This experiment dates back to the 1930's and reflects Einstein's dissatisfaction with the probabilistic nature of quantum mechanics. This experiment is shown schematically in Fig. 7 for a particular hidden variable interpretation format. Despite the brilliance of those who attacked the Copenhagen interpretation, that interpretation still stands. However, the EPR experiment has led recently to a singular advance in the search for a new formulation of quantum theory. Bell[28] has proved that if a reformulation of quantum theory is advanced that makes use of hidden variables, then those hidden variables must in general be non-local in character. This means that while hidden variables may interconnect events at different locations in space and time, those variables cannot have any functional dependence on the space-time separation of the events. The coupling by hidden variables has the same result regardless of separation in space or time.

A further important constraint on any new reinterpretation of quantum mechanics in terms of hidden variables has come out of this controversy. It has been acknowledged by both principal groups in this controversy (those arguing for a hidden variable reinterpretation or reformulation and those opposed to any change in the present Copenhagen interpretation) that in any reinterpretation, the measurement process--or observer--must remain unanalyzable as part of the measured system.[19, 20, 29] That is to say, the values assumed by the hidden variables that serve the function of collapsing the state vector (remember, no dispersion-free interpretation is allowed) is ultimately determined by the measuring apparatus-observer interaction with the quantum mechanical system being measured.

Finally, more than one observer can interact with a system that is measured. Since our "true" hidden variable theory must agree with the Copenhagen interpretation and since the theory of relativity places a constraint on the ideas of simultaneity and temporal order such that there is in general no unique frame of reference to establish one measurement on a system as the first interaction, the hidden variables that determine the collapse of the state vector must be collectively constrained for all observers (measurement apparatuses). This last fact was pointed out by Professor Abner Shimony.[30] This is an ingenious concept. Regrettably, Shimony pointed out this result of quantum theory simply to argue against quantum mechanics, assuming, on philosophical rather than experimental grounds, that such a conclusion must be false!*

Thus we see that a hidden variable theory is allowed and can be made compatible with the present experimental results in quantum mechanics if the following hold:

1 Hidden variables are independent of the space-time separation of events correlated.

2 The hidden variables provide an approximate dispersion-free (dispersion-free in the limit) formulation. (This simply requires the statistical character to exist in any formulation.)

3 The measurement process involves hidden variable interactions with the measured system. Thus the measurement apparatus-observer is not analyzable and the hidden variables are true hidden variables.

4 There is not a unique observer. The hidden variables (in the guise of the observer) collectively constrain state vector collapse.

5 The hidden variables do not enter into the Hamiltonian (more simply, they are not involved in field interaction effects).

The equations serving to provide this extended interpretation of quantum theory have been presented elsewhere.[3, 4] A comparison of this list of characteristics required for a hidden variable reinterpretation of quantum mechanics with the earlier list of characteristics for paranormal phenomena shows a clear parallel, which is its own best case.

Still the above is a rationale. We have now to show these ideas hammered into the steel of a theory, whose ultimate justification would lie in the fact that it accommodates extensive new data that no competing theory can.

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*Shimony has not been alone in this failure to note the correspondence between psi phenomena and the characteristic of quantum mechanics. The major contribution of Walker has been to point to the perfect correspondence between psi phenomena and the properties of hidden variables, state dispersion, and the observer effects on state selection.

Quantum Mechanical Processes at Synapses

We have now to provide one additional factor in the theory. This is the fact that the human observer, or the conscious brain processes, arise from essential quantum mechanical processes interconnecting the data-handling functions at synapses in the brain. As such, the brain is coupled through non-local hidden variables to systems that are subject to measurement (observation) which brings about state selection. It will not be possible to give here a full treatment of the quantum processes involved in the brain's functions. This has been discussed elsewhere.[31, 32, 33] Suffice it to say the following:

1 Quantum tunneling at the synaptic cleft can occur and appears to play a role in vesicle release and thus to be involved in a controlling role in synaptic switching.

2 There exists a leakage current, similar in nature to hopping conduction that occurs in organic materials. This leakage current provides an interconnection mechanism for the synapses in addition to the neural net.

3 Based on the resulting model[6] there are three data rates associated with the brain's functions. They are: (a) subconscious at 10^{12} bits/sec; (b) the quantum mechanically interconnected data flow between synapses at 10^8 bits/sec; (c) the data rate associated with switching decisions (state vector collapse within this quantum mechanically interconnected net) at 10^4 bits/sec.

These last two may be thought of as the data flow that we are consciously aware of (as opposed to the subconscious data) and what can be called our attention set. (In philosophy this last quantity is sometimes termed "will.")

It is the third data rate that must involve hidden variables if they exist to determine what a quantum mechanical system will do. The hidden variables are coupled to all other aspects of the overall system in which we find ourselves, collectively constraining the system into a deterministic development, into a single state moment by moment. (Actually the state vector collapse is never fully complete, only approximately dispersion free.) We see that this data rate gives a measure of the coupling of the system which serves as a data channel for paranormal interaction.

However, we also see that this data rate is in general only a part of the overall awareness of mental activity consisting almost entirely of information coming from our surroundings. For tasks like ESP and PK, these sensory data are spurious. As a result there is a serious signal-to-noise problem that hampers the occurrence or study of psi phenomena.

The Basic Equations of Psi Phenomena

We are now in a position to list the basic equations on which the quantum mechanical theory of psi phenomena rests. The full set of equations consists of the Schrödinger equation in which the state vector Ψ is a function not only of the customary dynamic variables but certain c_i variables (the hidden variables, our consciousness), the expression for the probability of occurrence of any given state, a set of equations showing the manner in which the hidden variables develop as a function of time, two equations giving Bell's theorem, equations for the subconscious, awareness or consciousness, and the attention set or the philosophical "will" together with the signal-to-noise processing carried out by the brain, and finally an expression relating the available data channel provided by the hidden variables to the probability for a given state selection. This complete set of equations has been presented elsewhere[8] so that we give here only the essential expressions.

Bell's theorem applied to these c_i variables states:

$$\partial c_i / \partial x_j = 0 \tag{1}$$

$$\partial c_i / \partial t' = 0 \tag{2}$$

where x_j are the spatial coordinates separating two systems and t' is the temporal separation between measuring events carried out on a given state vector. These expressions simply say that the variation in the values of the hidden variables or consciousness with distance or time is zero. That is, the consciousness coupling of people does not depend on their physical separation nor does it depend on time.

We have already discussed the fact that there is a data channel capable of carrying 10^4 bits per second of information that couples the consciousness and the brain to other conscious entities. But our senses--as we look at, hear, smell, feel and taste things--bring in about 10^8 bits/sec. As a result, our psi information channel is usually swamped by our senses (note that in many aspects of this theory of psychic phenomena, concepts occur that suggest religious interpretations).

This psi channel is much weaker than any of our ordinary sensory channels and thus we should expect psi phenomena to be comparatively rare. Stated more exactly, if for some information-handling process of the brain, $W = 10^4$ bits/sec are provided by the c_i as an information channel coupling all physical events of an overall state vector Ψ to those of the brain and $C = 10^8$ bits/sec are inputs to our awareness determined by the subconscious (and as a result by the sensory data channels), then, depending on the particular patterns of data handling by the brain, there will be some subset of this flow W_ψ (which must be less than W) which serves in a controlled way to effect state vector selection. The nature of this information-handling process has been modeled. (The process is quite akin to that found to be successful in the mathematical modeling of learning theory.[34] The results are discussed below.

For an initial physical state ψ_0, which after a time Δt develops into an overall state vector Ψ containing a state ψ_i manifesting the paranormal target event, there is a probability P that the state ψ_i will occur by chance alone. However, the selection of that state can be biased by the observer. If

$$W_\psi \Delta t \geqslant -\log_2 P\ (\psi_0 \rightarrow \psi_i) \qquad (3)$$

is satisfied, the (paranormal) target state can be achieved.

One point that is essential to the understanding of the theory concerns how the individual controls the hidden variables. The question is not entirely appropriate since it assumes the c_i provides an "outside" information channel. Actually, these variables are a part of the whole system that constitutes the individual identity, which includes the consciously experienced brain processes.

Extrasensory Phenomena: Statistical Analysis

The previous section presented the basic concepts on which parapsychological phenomena are to be understood. In this section a quantitative treatment of the problem is presented. Two characteristics are to be quantitatively treated, the magnitude of the effect and the distribution of the ability among the population. The discussion following will be concerned primarily with elucidating the form of the brain's data-handling function to enhance the signal-to-noise ratio for extrasensory perception.

It has long been recognized that persons have ESP ability to various extents. The following treatment provides an understanding for this fact. From the quantum mechanical theory of awareness or consciousness theory we find that in an interval of time Δt during which a call choice (for the card-calling type of experiment) is made, a total of $C\Delta t$ bits of information will enter into the consciousness of the caller, while $W\Delta t$ of these bits, being the information measure on the state vector collapse (see Eq. 3), will provide the channel by which call agreement occurs (as before, $C = 10^8$ bits/sec, $W = 10^4$ bits/sec). This is depicted schematically in Figure 8. Where learning or other means for the control of the channel is not present, the call will be based on some finite and random sampling taken from the $C\Delta t$. In analogy with learning theory[34] where it is shown that choices (in maze-type experiments) are based on a selection of cues, let us assume that the choice on each call is based on n bits, which for a given subject are always (at least for the span of most ESP tests) selected from the same "channels." The probability that any given bit from the sample of n bits is a spurious cue (i.e., that it is selected from $(C-W)\Delta t$) is given by f:

$$f = 1 - \frac{W}{C}, \tag{4}$$

while the probability that it is selected from W is given by

$$g = 1 - f = \frac{W}{C}. \tag{5}$$

The probability T_0 that for a randomly selected caller none of the n bits entering into that subject's call are selected from the W channel is

$$T_0 = f^n. \tag{6}$$

The probability T_1 that one of the n bits is a "true" cue is

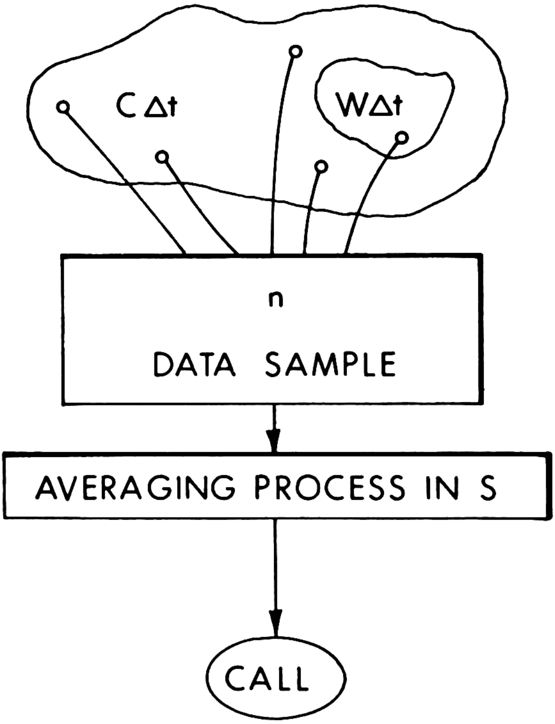

Fig. 8. Schematic of ESP card call process. The CΔt and and WΔt data points are selected at random from the subject's consciousness to form the data sample. The CΔt data points are spurious noise since no sensory data exist to enable identification of the target. The WΔt data sample, however, is coupled by means of the hidden variables to the target. An averaging process carried out by the brain's subscious data-handling operations selects the resulting call. If the WΔt sample is sufficiently large, the call is correlated with the target; otherwise it is not.

$$T_1 = nf^{n-1}g. \tag{7}$$

The probability T_2 that two are "true" cues is

$$T_2 = \frac{n(n-1)}{2} f^{n-2}g^2. \tag{8}$$

The quantities T_0, T_1, T_2 are simply the first, second, and third terms in the expansion of the binomial $(f+g)^n$.

If the caller belongs to that portion of the population represented by T_0, then all calls will be uncorrelated with the order of the cards. However, if the caller belongs to

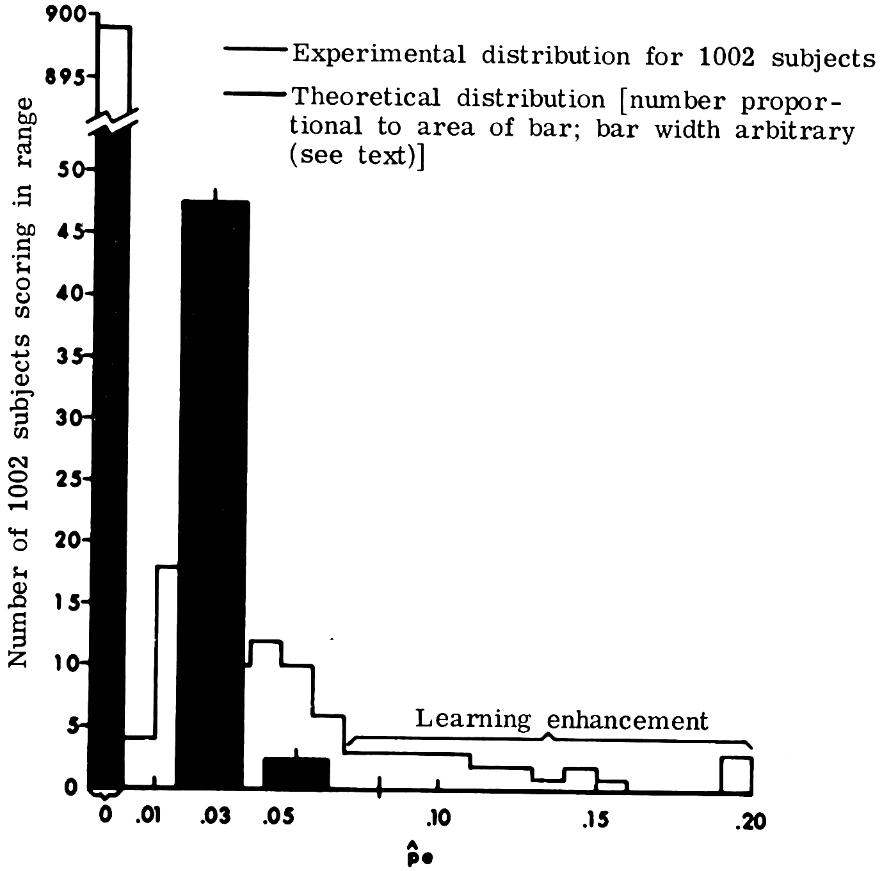

Fig. 9. Distribution of ESP capacity among population as function of Gridgeman's measure of genuine hit probability: comparison of experimental and theoretical data as obtained for a population of 1002 subjects.

T_1, one of the n cues will be a true cue; n-1 cues will be distributed at random among the S possible calls. There is a statistical fluctuation in the distribution of the cues among the possible calls. Since there is no characteristic other than number to distinguish among the various cues, the call must be selected on the basis of which possible call is most heavily weighted. The spurious cues are distributed at random among the possible calls while the true cues are all correlated to the target. The mathematics for determining the distribution as a function of psi ability in the population is straightforward from these assumptions and has been developed in detail elsewhere.

Figure 9 shows the resulting distribution. It gives a plot of the number of subjects from a heterogeneous sample[35-48] of 1002 scoring at or better than chance for various ranges of $\hat{p}_e$, the probability of a psychically-induced correct call, corrected for those expected in the original data from chance alone (that is to say, since the total sample is large, a correspondingly high criterion was necessary to adjust for individuals having high scores from chance alone). The Gridgeman's measure[49] of genuine hit probability $\hat{p}_e$, is used, since data are taken from some experiments in which S, the number of possible choices on each call, had a value other than S (which obtains for Zener cards). It should be noted that the selection of a single value for n for the entire population is artificial. A distribution over a range of values should occur; however, since this would entail additional constants, more extensive experimental data would be needed to justify including this. The effect of such a distribution on the theory is suggested in Figure 9 by the arbitrarily chosen bar width for the display of the theoretical data. The approximate magnitude of overall psi ability in the population is predicted by the theory. If the experimental value for the portion of the population scoring at the chance level is used to obtain n, the distribution arises from the theory. The gross features of the curve are given by the theory. In both the experimental and theoretical data there is a peak at $\hat{p}_e \approx 0$, 0.027 and 0.555; in both the curve drops rapidly, although learning enhancement may be the cause of the slower falloff of the experimental data with increasing $\hat{p}_e$.

Application of the Theory to Psychokinesis Placement Experiments

A series of papers by Forwald[50-53] report experiments to determine the effects of the physical conditions of objects on psychokinetic phenomena. These experiments have demonstrated that the path taken by cubes bounced down a gangway onto a table can be influenced paraphysically. The data obtained are unique in that the physical conditions of the cubes were shown to have important effects on the magnitude of the phenomena.

Forwald interpreted the displacement as arising from a force acting on the cube. From his calculations the magnitude of the acceleration acting on the average cube was 15 percent that of the gravitational acceleration. Were a force acting, a much more direct demonstration should be possible. A ball placed on a flat surface should then be easy to move by PK. Forwald did not succeed at this task,[54] however. The reason for this result stems from the fact that PK does not involve any force. The nature of the phenomenon lies in the allowed quantum mechanical states of the system and the associated probabilities for those states.

The mechanics of a bouncing cube belongs to a very special part of dynamics. The trajectories are divergent. Thus a small change in the initial position or orientation of the cube leads rapidly to gross changes in the path the cube follows. This divergence develops so rapidly that changes on the atomic scale will result in a different path for the cube. Thus processes at the quantum mechanical level--i.e., the position uncertainties as given by the Heisenberg relations--will lead to an indeterminacy in the final position of the cube. As in the case of ESP, control of the c_i variables makes possible the control of the cube's path. The mathematics involved in this process has been developed so that one can relate the cube deflection to the number of bounces, impact parameter, radius of gyration, etc.

Forwald in his experiments studied the question of the dependence of the magnitude of the cube deflection on cube material and construction. By adding layers of different materials (aluminum, copper, silver, etc.) and of varying thickness to beechwood cubes he found that the magnitude of the paranormally controlled deflection (after correcting, that is, for the mean cube position expected from chance alone) are shown in Figure 10 plotted against the thickness of overlay materials. (The reported values of t, i.e., the ideal values, are given as abscissa although measurement showed the true values to be somewhat different.) The results show very good agreement with theory without adjustable coefficients.

We have achieved theoretically, one, agreement with the magnitude of the effect and, two, agreement between the calculated and experimental values of y_0' for the 13 pairs of values yielding a chi-square statistic for 12 degrees of freedom of 2.020 for significance to the 0.0006 level.

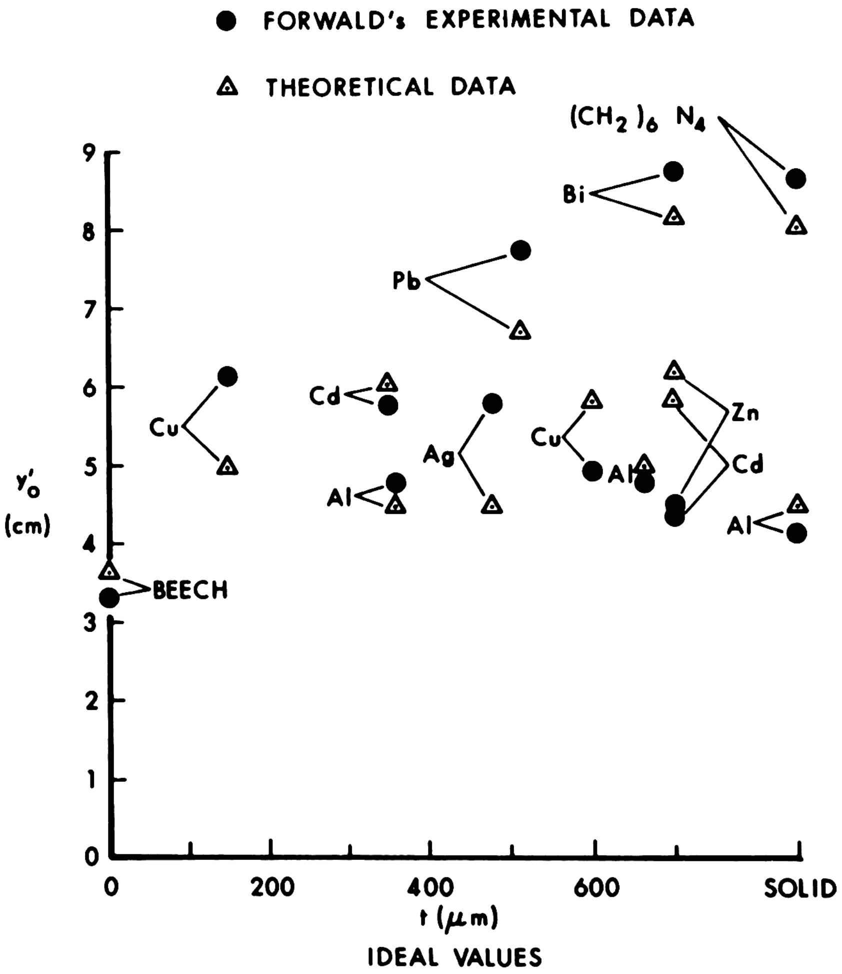

Fig. 10. Plot of the theoretically-derived values of y_0' (the paranormal deflection) as a function of increasing thickness of cube overlay materials. Forwald's experimental data (for the 13 cubes obtained) are also shown. The chi-square statistic for 12 degrees of freedom yields a 0.0006 level of significance.

Achievements of the Theory

At this point it is appropriate to mention the general foundation the present theory provides for understanding paraphysical and parapsychological phenomena. First of all, the theory is consistent with modern physics. As already mentioned, the present theory arises from the difficulties encountered in the measurement problem in quantum theory.[2-5] Not only is consistency achieved, but the present conception is a part of a broader interpretation, an extension of the Copenhagen interpretation of quantum theory, that resolves difficulties with the more limited interpretation.

Secondly, since it is clear that paranormal phenomena must involve some fundamental "physical" process and yet clearly become manifest as a part of the will of sentient beings, any solution to the problem must unify physical concepts with an understanding of the nature of consciousness. The present theory, which is based on the theory of consciousness as a quantum mechanical phenomenon, achieves this.

Third, experiments to test for a spatial dependence of ESP and PK have been negative. This fact follows immediately from Eq. 1, which is a property of hidden variables that has been established by Bell.[28]

Fourth, the independence of the temporal coordinate manifest in the phenomena of precognition and precognitive PK follows from Eq. 2.

Fifth, a little-appreciated difficulty with clairvoyant phenomena lies in the implication that the paranormally perceived information is nevertheless perceived in a form very much like normal vision or audition. Thus, information printed on cards in a manner especially designed for visual recognition is paranormally perceived, frequently as a visual impression. The complexity of the data processing required of the brain to reduce visual and auditory patterns to a meaningful form[55, 56] must either be replicated for the paranormal phenomena or the phenomena must have such a character that the normal visual, auditory, etc., brain functions at some point enter into the process. According to the present theory, it is the latter alternative that is involved. The process, rather than involving paranormal vision as such, involves a selection of the overall event through state vector collapse in which agreement between the call and the record (when checked) occurs. Thus the present theory accounts for this aspect of clairvoyance.

Sixth, experiments in which solutions to mathematical problems are used as targets, as well as other types of complex targets for ESP and PK experiments, are understood in terms of the present theory. The basis for positive results here is the same as discussed above for the clairvoyance phenomenon.

Seventh, many PK experiments involve large numbers of dice per trial with the hit rate generally increasing with the number of dice involved.[57] Since the larger number of dice will involve more collisions with one another, the process is physically more divergent than would occur with a small number of cubes. An increased number of such cubes increases the chance that the target occurs as a potentiality of the event. Unlike conceptions of PK as a force, the present theory does not lead one to expect a difficulty in PK "handling" of large numbers of cubes.

Eighth, the sporadic nature of the phenomena, involving as they do a range of possible states, cannot be clearly separated from the effects of the experimenter on the overall process. The lack of significant results for subjects or groups of subjects that from the evidence of previous experiments should be expected to provide them can be understood in terms of several factors, principally the important influence of the experimenter (who can never be entirely separated from the process as long as he serves as an observer) and the effect of dilution of the data channels of the will in the overall experimental data stream.

Ninth, the basis for the distribution of ESP ability in the population is accounted for in the present approach. Further, since there exists an asymmetry in the present theory between the PK "encoding" and ESP "decoding," differences in the distribution of ESP and PK ability may be anticipated. The existence and extent of such an effect is yet to be explored either theoretically or experimentally.

Tenth, the placement experiments carried out by Forwald, interpreted as involving a force, indicate that quite large accelerations (one-sixth that of gravity) should occur if a hypothetical PK "force" were directed onto a ball (stationary or rolling) on a flat surface. Results[54] obtained were insignificant (the very small effects observed are attributable to irregularities in the equipment). In the present theory, the motion of objects strictly rolling on regular surfaces is not divergent in character (small-scale bouncing can introduce divergence), and no PK effects are expected. However, those rare subjects for whom $W_\psi \approx W$ should be capable of producing such effects under certain conditions as allowed quantum mechanically by Eq. 3.

Eleventh, the magnitude of the ESP and PK phenomena has been derived from theoretical considerations without the requirement of adjustable coefficients.

Twelfth, the "sheep/goat" phenomenon in parapsychology is accounted for.

The present theory clearly predicts that no "burst of radiation" (emission of atomic particles) from ESP-PK targets or subjects will be found to accompany (as a necessary by-product) paraphysical events (except as such radiation is the target of the test and as allowed by and within the limits of Eq. 3).

Equation 3 predicts that for a given subject (performing under optimum conditions and having neither difficulty visualizing the nature of the experimental target nor psychological aversions to it), the magnitudes of results obtained in tasks to affect readings on measuring devices such as termistors, magnetometers, radiation detectors, Josephson effect devices, balances, etc., can be related to one another by calculating the probability of the reading based on the standard physical principles of quantum mechanics. Furthermore, changes in such systems (such as in the level of amplification) which increase the probability of larger deviations will have a directly calculable effect on paranormal goal achievement. It should be noted that, in general, changes tending to increase background noise in systems will enhance the magnitude of effects observed. However, if the noise in the system does not stem from a quantum mechanical process (such as computer generated pseudo-random noise), increase in noise will not enhance the magnitude of the resulting performance but will obscure the paraphysical effect.

Finally, the process involved in PK is not one in which a directed force acts on an object. As a consequence, PK does not involve a transference of energy from the subject responsible for the PK event to the object affected. There can be only a redistribution of energy present in the system and that only to the extent that the particular energy distribution was allowed as a component state of the state vector. This fact should be experimentally demonstrable.

In like manner, ESP is not strictly a communication process. While it has been useful to speak of communication channels in the foregoing discussions, the process giving rise to ESP is quite distinct from such a concept. In communication processes, information or words are symbolic representations of realities. In psi phenomena, the "word" is a willed act that creates the reality which it then represents.[58] The word is causative.

Summary

As we see, the experimental evidence for both extrasensory perception and psychokinesis is extensive and well founded. Criticisms to the contrary have been motivated out of ignorance of fundamental physical principles; this ignorance has largely impeded theoretical development of this field. The theory that has been discussed here is remarkable in that it not only resolves the problem of psi phenomena, but it makes contribution toward the understanding of basic problems in other fields as well. The theory resolves the measurement problem in quantum theory, contributes to the understanding of both the philosophical and psychological questions about the nature of consciousness, and contributes to the understanding of synaptic mechanisms.

The assimilation of this new knowledge into the body of science may be slow or rapid, depending on the resistance to its implications. The presently prevalent scientific paradigm cannot survive, however, and will be supplanted by the conception presented here.

Such a fundamental change in our basic scientific concepts cannot fail to touch anthropology. Indeed, that is where it began, in the mind of man. The anthropologist must deal with the facts of physical reality, facts that confront him and facts that confront the cultures he would study. Those cultures may respond to physical phenomena by erecting belief systems--systems that may be spurious or that replicate reality faithfully. But the anthropologist who constructs a belief system to perpetuate 19th-century physical concepts does not build tomorrow's science, but yesterday's superstition.

* * *

Editor's Conclusion

We are rapidly approaching a new stage in parapsychology, quantum theory, and nuclear physics in that we see these three to be entirely compatible. Established principles of parapsychology contradict the usual limitations of time, space, and matter. In quantum mechanics and nuclear physics,

> If we ask whether the position of the electron remains the same, we must say 'no'; if we ask whether the electron's position changes with time, we must say 'no'; if we ask whether the electron is at rest we must say 'no'; if we ask whether it is in motion, we must say 'no.'

This statement from nuclear physicist Robert Oppenheimer [quoted in L. LeShan, Toward a General Theory of the Paranormal (New York: Parapsychology Foundation, 1969)] sounds more like Isaac Asimov in a light moment; it seems, as a statement of fact, to support principles of psi. Countless similar statements accepted in physics (and apparently the scientific community in general) could be cited. But the real question, it seems to me, is, "Does theory in quantum mechanics and nuclear physics actually support psi, or does such theory simply not reject psi?"

We may examine this problem through the work of the physicist Evan Harris Walker, who is now applying quantum theory directly to the theoretical problems of parapsychology. Allow me here to very simplistically summarize and apply his ideas, with my interpretation as to their meaning. His main postulate is that "consciousness is a nonphysical but real entity," on which pain, pleasure, and so on, ride, yet which exists as something fundamental in nature interacting with ordinary physical processes at the cerebral level. Consciousness is an onset phenomenon, as indicated by the absence of most conscious experience during sleep, yet electromagnetic differentials between wakefulness and sleep are insufficient in magnitude to satisfy criteria for onset phenomena. Further, the state of consciousness occurs in the brain when certain processes involving quantum mechanical coupling of synapses come into play as the level of synaptic activity rises in the brain. Now, according to the Copenhagen interpretation of quantum mechanics, single states in systems cannot be calculated deterministically, as in newtonian physics, but only probabilistically. That is, there are no single states but, in general, infinite numbers of them, each representing solutions to the Schrödinger equation. The collection of these states or individual vectors is called the state vector. Measurement of the system collapses the state vector onto one of its component states, giving a probabilistic calculation. But measurement has a meaning in quantum physics only relative to an observer who interacts with the thing measured. The nature of this measurement, or the observer-datum interaction, effects this collapse of the state vector. This means, in practical terms, that the choice of how the state vector is to be collapsed leads to the summary solution to the Schrödinger equation, involving not only processes in the brain or events in the external world, but the total interacting system--brain, body, and world. That is, at some point we choose one solution out of many possible ones, and our choice may go beyond what would be expected since newtonian physics is only an approximation--that can differ with quantum mechanics even for macroscopic events. This state vector collapse for macroscopic states involving both the brain and the external world is, then, PK. (Parenthetically, this might explain why precognition is strongly supported but retrocognition is only indirectly supported. In essence, precognition would represent the collapsed vector solution to an unevolved state whereas retrocognition cannot work by this process because the solution is already evolved.) By way of explanation it should be repeated that (as Walker says) "if observers collapse the state vector, and there is no preferred observer, the observers must be constrained collectively. This means that all the observers of any event must share one or several" of Bohm's "hidden variables" which explain the idiosyncracies of quantum mechanics; these "hidden variables" are not functions of space or time.

Enough is known about synaptic transmission in the brain to suggest that the quantum mechanical tunneling process is involved so that firing of the synapse is a state or component of the vector; the failure to fire is also a component. Thus, the result of any tunneling event must involve and be consistent with state vector collapse. Likewise, this is consistent with the postulates that: (1) Consciousness (as an onset phenomenon) is contingent on the so-called "hidden variables" necessary to explain some processes of nuclear physics and quantum mechanics; thus, consciousness is as fundamental as any of the most basic constituents of the of the physical world. (2) Consciousness is a non-physical entity. By this it is meant that one does not measure consciousness in the way one measures the usual physical quantities. One does not measure electric charge directly but rather forces or motions are measured to determine electric charges. Similarly, establishing that consciousness is present requires measurement procedures that are topologically distinct from and more sophisticated than ordinary physical measures. In these ways, consciousness and psi have common properties, and psi, as at least one component of consciousness, might as readily effect an event as affect one's perception of an event. (This does not provide a solution to the many theoretical problems of how the state vector collapse is constrained by consensus requirements of collective observations and culture--or "traditional collectively delimiting expectations of probabilistic causes and effects." But the question is considered by Walker in a new paper in preparation.)

Walker's work suggests to me an entirely new view of psi, in contrast to the old energy-like model, namely that we may "choose" our realities and thus, by choosing, create them. (However, Walker never quite says this, and he does note that any reality-option model would still be limited by energy-conservation constraints. Thus, in PK deformation of physical objects, some energy input is required, but this energy is not a "psychic energy," but comes from the environment of the object.) I submit to you that, contrary to Castaneda's apparent view that there are separate realities (which one is tempted to dub the "head" model), there is in fact only one reality. While Walker's model (or my interpretation of its meaning) may be no less strange to us than Castaneda's, I hold that it is not only more amenable to scientific testing but also more consistent with known facts. Although I doubt that anthropologists--even physical anthropologists--will provide the final solution to these problems, I believe it is important to recognize that the less fuzzy our theoretical models the better use we can make of parapsychology in anthropology.

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58. [Editor's Note.] With respect to Walker's evaluation of the mind's "will," *W*, I should note that this is a variable calculated on the basis of brain data processing and data consciousness impression as determined electrophysiologically. It is calculated to be: W = 3 x 10^4 bits/second.

    With respect to his predictions as to results of will, I should note that these are partly delimited by regular psychological processes. For example, we may assume that in testing situations, the tester's "hidden variables" will be preferred over those of the respondent, but also that the respondent will affect this preference by his subliminal "awareness" of what "reality" should be. Thus, we might suppose that one explanation for correct hits in clairvoyance experiments is the respondent's failure to randomize agreements with the tester. Common sense will lead to randomization according to the beliefs as to what is "rational" in our culture. Psi tests themselves randomize (for example, five cards each of five symbols yields the 25 card ESP deck), so correct choice depends both on randomization and on choosing the correct "random" cards. Although there are apparent cases of idiot savant-psychics, the ESP tests generally indicate that higher I.Q. may lead to more accuray in cases where high I.Q. does not lead to disbelief in psi.

THE FORMERLY "SUPERNATURAL": ELECTRICAL AND PSI FIELDS IN MEDICAL ANTHROPOLOGY

James B. Beal

Editor's Comments

Beal, an electrical engineer by training, might be described as an applied futuristics space scientist, or as a physician of the supernormal. His employment with NASA and Miami Heart Institute demanded his development of practical applications for what is known about electrostatic (ES), electromagnetic (EM), and psychical (psi) occurrences which are important to human survival but not well understood within the field of medicine. In doing so, he has emerged with the rather disquieting observation that a number of occurrences labeled "psychosomatic" by physicians or "supernatural" by medical anthropologists are either already understood by electrical engineers or are known to have physical, nonpsychological explanations. Hence, what are myths or old wives' tales to the physician or anthropologist are reality to the medical engineer.

Beal's explanations are somehow more acceptable to us because they frequently relate to phenomena which, like firewalking, were at one time classified as anomalistic (having no explanations) or psychical (having only a parapsychological, and therefore bizarre, explanation) but may now be understood as being due, at least in part, to natural electrical phenomena. This does not necessarily rule out psychological factors as we have understood them in the past (Long 1975), but merely introduces a more straightforward explanation to what we have previously understood only in terms of pseudo explanations.

Thus, we still believe that cuddly little animals may be psychologically comforting to asthmatics. But we realize too that the immediate effect is due to the fact that dogs' fur, for example, generates an intense positive ES field thereby setting up ionic flow which compensates for the asthmatic's natural physical deficiencies. This does not entirely negate psychological theories, but, at a practical level, it suggests relatively simple artificial treatments which have the same beneficial effects as the lap dog's fur.

At the same time, we are forced to reexamine many of our facile "explanations" for many diseases, including psychoses. Grof (1972) has shown that in thousands of cases he has treated by psychosis-induction, many transpersonal experiences exhibited apparent psi characteristics suggesting that true psi may play an active role in many cases commonly labeled psychosis. Van Dusen (1968) goes so far as to suggest that real psi entities may be present in so-called psychosis, and he claims a number of successful treatments based on this concept. Beal shows here how microwave buzzing, hissing auroras, phosphene effects, psi impressions, and visual image modification of EM fields during mescaline intoxication can occur in humans and be modified in the laboratory.

Other cases are more complicated by the working together of psi and supersensitivity to produce effects which neither could produce by itself. Thus, "water-witching" can be "explained" either electronically or psychically, but appears to be successful only when the two factors are employed together in individual "machines": humans. Although one study (Vogt and Hyman 1959) has questioned such mechanisms, the EM effect was not understood at the time and "dowsing" has continued to enjoy the rewards of tough empirical tests since that initial report. The same may be said of fire-walking. Since Beal here describes how fire-walking may operate electrically as an altered (mental) state phenomenon and Pearce (1971: 2-3, 104, 111) has shown how the anthropologist may replicate the trick without employing conscious psi, it is easy to see how such effects may be examined under properly conducive conditions. Greist and Lyon suggest in this volume that psi operates to communicate more easily or with more precision for the average person when employed in what appear to be "normal" situations: in the contexts of speech and eye contact. In the same way, psi may be observed more easily when context does not damage the anthropologist's personal sense of reality.

Most would still like to think that there is a basic dichotomy between the real and the unreal, the electronic and the paranormal. But Beal provides no basis for such a dichotomy. Being relatively unconcerned with theoretical matters and the precise mechanisms allowing the supernormal to operate, he shows that, in a strictly practical sense, psi and electrical phenomena operate the same way. Psychokinesis may represent a non-electrical occurrence, but psi can be learned with electronic gadgetry the same way as physio-electrical control (e.g., alteration in brain-wave patterns such as alpha rhythms).

In sum, anthropologists may continue to view everything in the supernatural realm (i.e., all occurrences which may not be explained in terms of their anthropological training) as merely part of primitive mythology. But we must realize that however we verbalize this, large segments of the formerly "supernatural" are now being explained in other disciplines as normal, and often commonplace.

* * *

Introduction

The broadest possible overview of our effects on our environment, its feedback, and the mental and physical results is needed for realization of our total potential. As a product of nature we are all "tuned in" in subtle ways, and our biological rhythms and chemistry react accordingly to electromagnetic (EM) and electrostatic (ES) fields, low frequency radiation, ions, and other complex variables.

The brain and its vast web of nerves operate with electrical signals. With the discovery that certain individuals are extremely sensitive to electrical fields to which they are exposed (which cause audio, visual-phosphene, and reaction time effects, headaches, undefined aches and pains, etc.), studies have been made to determine the source of these effects and how they are generated and manifested. Monitoring of the minute electrical field changes that accompany all biological activity has opened new possibilities for determining the effects of mind on body processes, early diagnosis of pathological conditions, and development of the optimum environment. The subject of how we are electrically polluting the environment, and the related problem of bioentrainment, which affects our reaction to this pollution, are discussed.

This chapter will also outline some of the areas where "outer space" research, in the synergy of many disciplines, has produced spin-off benefits to "inner space" research. Three areas are (1) determination of characteristics associated with the psychic person during a paranormal event by monitoring of interrelated psychological, physiological, and environmental effects; (2) optimizing the test situation in the laboratory and on-site to augment paranormal events by control of natural environmental factors such as temperature, humidity, lighting, EM and ES fields, ion balance, and various energy spectrum frequencies, plus subtle psychological positive enhancement techniques; and (3) equipment for training/enhancement of psychic ability, normally unconscious processes (biofeedback), or induction of altered states of consciousness (ASC).

The rapid emergence of the general study of consciousness has been concurrent with improved electronic equipment for the complex task of monitoring internal, external, and emotional effects associated with living systems, which developed in large measure from the environmental requirements of space flight. Research is underway and applications are already beginning to emerge which will bring increased knowledge, awareness, and understanding of the universe and its complex actions which affect us. The implications for medicine, science, technology, psychology, philosophy, anthropology, and culture in general are staggering. Knowledge will come from a blending of electronics, biology, physics, biofeedback training, and the study of subjective experience with methodology from parapsychology and systems engineering.

The Illegality of "Natural Laws"

With monotonous regularity, apparently competent men have laid down the law about what is technically possible or impossible--and have been proved utterly wrong, sometimes while the ink was scarcely dry from their pens. Until the 1950's biologists regarded a cell as a minute bag of fluid that was relatively simple in structure. But under the electron scanning microscope, cells were seen to be exceedingly complex. What earlier seemed to be a "simple cell wall" was likely to be folded, convoluted, and multilayered--precisely the right kind of structure to serve as a semiconductor (Cope 1971). And components of the cell are likely to include organic semiconductors such as liquid crystal material that is hypersensitive to temperature changes, magnetic and electric fields, stress, radiation, and trace contamination. To complicate matters even more, many cells have a double outer membrane; electrically, such a membrane functions as a capacitor with the characteristics of a leaky dielectric (Garrison 1969). Recently, superconducting fluctuations have been observed experimentally in organic molecular crystals at transition temperatures of 60 K (Anon. 1973). A number of investigators feel that a strong possibility exists for superconduction in special circumstances at room temperature within living systems (Puharich 1971).

Electrical Effects and the Mind

The mind, as a product of brain, body, and environmental stimuli, may be the highest form of synergistic pattern now known to exist. The phenomena of consciousness and learning processes need more objective study. But consciousness or mind has only itself to study itself with! It may be worthwhile to start with simpler systems and work our way up. Perhaps the emerging use of "biosensors," such as plants, tissue cultures, and single cell organisms, will give us the necessary amplification and selectivity for specific quantitative data of value. One is reminded of "biosensor" canaries used by miners to detect poisonous gases before electronic sensors were available.

There is quite a bit of work going on in Soviet bloc countries and Europe on the effect of EM and ES fields on the central nervous system and EM and ES effects around the human body during certain types of paranormal phenomena. The Russian research in parapsychology and paraphysics appears in proper modern semantics as "biological radio communication," "the problem of information transmission," "perception of space effects," "meteorological feeling," "generic memory," "bioenergotherapy," "bioenergetics," etc.

We should be aware that the work of the Soviets could result in some sort of most useful technological surprise, at the very least in some worthwhile biomedical breakthroughs. Instead of heaping scorn on an unexplainable phenomenon, they accept it as a natural, spontaneous, rare event characteristic of mind and proceed to investigate it. Frankly, they don't have to prove it to themselves as much as we in the Western world have to do! There are not as many built-in cultural biases and mental blocks to overcome (Beal 1973a).

Creative processes, like psychic processes, can be stimulated by strong emotion and prolonged concentration; creativity is also commonly accompanied by neurotic symptoms and personality, because of a different way of looking at things and resultant interpersonal and cultural conflicts. However, if we recall that the profound basis of creativity is a free flow of ideas from the subconscious to the conscious mind, we see that this is similar to other psychic phenomena; that although messages may register on the receiver's subconscious mind, there are so many stronger and more dynamic mental functions to restrict the registration of these messages on the conscious level (producing a high noise-to-signal ratio), that more frequently than not, the message will be repressed. Rhine noted the close association of psi phenomena and creativity as early as 1934, when he indicated that the highly creative skills of the composer, the inventor, the poet, and the reflective scientist required the highest integration of the nervous system for their best creation. Skepticism, low motivation, physical fatigue, and depressant drugs preclude good test results (Rhine 1953).

Natural Field Ion Effects

When someone postulates a new nuclear particle, gigavolt particle accelerators are fired up, massive hydrogen bubble chambers are activated, and 100, 000 photographs are taken. Computers are programmed to search all the plates seeking the proposed pattern. The physicists say, in effect, such a particle exists and it should have these properties, and then they make a test to check the proposed model. Researchers are now starting to do the same thing on unexplained phenomena relating to the nature of mind, using some of the ultrasensitive testing equipment now available for application as detectors, enhancers, suppressors and biofeedback training aids (Campbell 1967). This stategy can be readily employed with respect to natural field effects.

The earth's natural field is normally positive, ranging from a few hundred volts per meter (v/m) to many thousands of v/m, depending on altitude, humidity, temperature, and geographical location. Inside metal-frame buildings, automobiles, airplanes, or any structure surrounded by metal the earth, the ES field is zero; a natural Faraday Cage is produced (Carson 1967). Indeed, the extensive use of plastics, almost all of which have a high negative ES field, inside of buildings and vehicles, can provide a strong negative field which augments fatigue, irritability and malaise. This suggests that we are electrically polluting our environment. (New plastic-containing clothing sticks to the body in cold, dry weather. The body field is positive and the plastic is negative, thus creating this uncomfortable effect.)

The earth's ES field keeps the natural negatively charged oxygen ions on the move, producing beneficial physiological effects in living organisms. Man's evolution, and that of other living systems, has been within this natural effect. An interesting earth field effect perceived by animals is the "earthquake alarm." An earthquake causes a buildup in pressure in surrounding rocks. If these rocks are predominantly crystalline in nature, the piezoelectric effect accompanies the storage of tremendous amounts of energy which may be occasionally released just before an earthquake. In Japan "earthquake lightning" can occur in a cloudless sky. In Tashkent, Asiatic Russia, in 1966, a "sky glow" preceded a quake by several hours. The ionosphere above Hawaii suddenly became transparent about an hour before an earthquake hit in April 1973. The long-wave radio reflecting layer some 80 kilometers high absorbed all signals, and the Navy's Omega navigational system used for guiding ships began drifting uncontrollably. After the quake the ionosphere began reflecting again (Jueneman 1974). These local field changes produce a characteristic "signature pattern" and propagate at the speed of light; hence, the animals sense a sudden change in the usually stable, slowly changing environmental low-frequency and ES field background. This is unusual, so the animal is alerted, nervous, and prepared for danger. Animals have the same reaction to radiated energy of hurricanes and tornadoes.

The electrical field differences in potential provide motion force for ions carrying electrical charges. This may explain why effects of (+) and (-) ions on living systems, without the proper ES field present, give erratic or contradictory results. Tests have been conducted under the proper conditions with qualitative results indicating (-) ions (O_2 molecules with a surplus of electrons seeking to enhance electro-chemical processes) improve performance, disposition, equilibrium, burn recovery and healing, and relief of pain and allergic disorders; (+) ions decrease performance and depress disposition or has no effect (Hardy 1969).

Viewed as a minute but extremely elaborate electrochemical system, the living cell is subject to the influence of EM and ES fields. These fields may induce not just one reaction but a complex system of reactions. They act as indicators of environmental conditions. Reported field effects at the cellular level and psychic phenomena at the mind level are therefore diverse and debatable. Effects depend upon field orientation, components of the system, its organization, its energy, and other variables. Indeed, effects are often more apparent in living systems which are not healthy! For example, Familial Periodic Disease, a type of periodic paralysis with preponderant 4 to 6 Hz electroencephalographic waves, shows evidence of psychic ability in a large number of cases (Neil Terhune, personal communication, 1973; Jule Eisenbud, personal communication, 1973). Baron von Reichenbach, a 19th-century German scientist, found that psychic individuals who were ill were hypersensitive to magnetic fields.

Recent brainwave experiments indicate that ES fields can influence the rate of spontaneous electrical impulse generation by the nerves. Brightness discrimination and alertness improve under the influence of a (+) ES field, and the visual critical flicker frequency is affected (Mizusawa 1969; Sugiyama 1973). Overall beneficial effects of (+) ES field applications are caused (Schanfranke 1972) by reduction of the viscosity-index blood and lymph fluid, producing antifatigue effect and acceleration of growth factors. The earth's (+) potential gradient reaches a maximum during full moon to third quarter; the metabolic processes of life increase, as does oxygen consumption (see Luce 1970, 1971; Brown 1959). Traditionally, crops are planted at this time for optimum germination. In addition, it is wise to avoid surgery at this time to prevent problems with "bleeders," especially with tonsillectomies or minor surgery when the patient goes home soon after the operation.

The electrophoresis effect causes the positively-charged microbes, viruses, and bacteria to travel to the (+) anode of an ES field. This is germicidal, creating clean room conditions. In larger cells, the internal charges create (+) surface charges. Surface charges are important to all living processes and are demonstrated electrophoretically. Body cell renewal happens through results from ion exchange. Waste products are expelled through the skin and excretory tract. The electric field attracts surplus ions away from the body surface, permitting rapid and unhampered renewal of all cells. This effect contributes to the general health. Air ions result when atoms, molecules, and particles become charged by loss or gain of electrons. Principal sources of air ions are high energy particles such as alpha and beta rays from radioactive sources, cosmic rays, ultra-violet rays, coronal discharges, charge separation from rapid surface movements, and thermionic emission. Ordinarily, only about one molecule in 10 is ionized or charged, and these frequently clump together forming groups. Unipolar, small air ions are biologically active under certain conditions. Oxygen molecules attract electrons and thus form negative ions; positive ions are formed primarily by CO_2 molecules.

Wind, Health, and Culture

In the Middle East the khamsin or sharav wind moves up out of the desert for 150 days in spring and fall each year. Hot air and dust is retained as this wind sweeps across Africa and the Sinai, and a variety of afflictions follow its northerly thrust. Moistureless air causes feet to swell painfully, noses and eyes to itch, and asthmatics to gasp for breath. Automobile accidents, crime rates, and mental illness increase.

Other countries suffer from such hot dry winds containing an excess of positive ions. Italy has the sirocco, southern Europe has the Föhn, France has the mistral, and the United States has the Chinook and Santa Ana winds. Young people become tense, irritable, and occasionally violent. Older persons become fatigued, apathetic, depressed, and sometimes faint.

Professor Sulman of the Hebrew University's Department of Applied Pharmacology in Jerusalem has conducted a nine-year study involving 500 people using drugs such as monoamine oxidase (MAO) and negative ion generators, which readily bring relief to khamsin victims. Thrombocytes in the blood otherwise react to the (+) ions by releasing the neurohormone, serotonin. This reduces breathing capacity by about 30 percent and causes headache or dizziness, sore throat, and nasal obstruction. MAO and negative ions prevent the release of serotonin (Sulman 1971). Krueger (1969) has verified this work at Berkeley.

Folk Medicine and Electronic Research

Negative (-) ES fields markedly reduce vitality and fertility in animals, whereas (+) ES fields stimulate respiration, digestion, and metabolism in general. A positive field device may easily be constructed (see, e.g., Popular Electronics, February 1971, p. 70), or an electrostatic copying machine power supply may be obtained inexpensively at surplus supply houses (the Xerox supply has three 7 kV outlets, one negative and two positive, at no load condition). Similar effects of a positive field on plant growth and on human performance have been observed (Anon. 1971). The author's 1971 experiments with bean seedlings utilized a simple d.c. power supply radiating a 2000-volt (+) potential ES field from a metal plate parallel to and 15 cm above the soil surface. A four-day earlier germination resulted for the exposed plants. Subject and control plants were grown in screened and grounded enclosures under the same conditions, except that the control group had an inactive plate above it. This experiment was repeated again in 1975 with the same results.

The same equipment was used on a child of 14 months who had recurrent monthly bronchial asthma attacks requiring hospitalization. With the metal plate installed 1.5 meters over his bed there were no further attacks in four months' time. On removal of the equipment for shipment to Israel for evaluation by Sulman, there were subsequent mild attacks which could be controlled with routine medication.

There may be many psychological factors associated with asthmatic pathologies but there seem to be some possible field effect tie-ins to the old wives' tale which can be called the "Chihuahua (or Dachshund) Effect!" Basically, the idea is to give a child with severe asthma a small dog. The dog must be near the child as much of the time as possible, and must sleep with the child. There was much controversy about this type of therapy twenty years ago. The only possible answers at that time were the psychological benefits of a child having a small, lovable, animal to play with. This now appears to represent a simple ES field effect.

Beneficial effects of the positive ES field and negative ion relationship have begun to accumulate, and information on the positive ES field around plants, animals, humans, and the earth suggests various tie-ins. Electric field intensity meters have become available to confirm these conditions, and it was found that small dogs, such as dachshunds and chihuahuas, frequently have up to 400 v/m (+) potential! The potential generated, which is about twice that normally found in the Huntsville, Alabama, area, is due to rubbing of the dog's short dense hair and a high metabolic and breathing rate. We can now replace the dog with a d.c. power supply.

A similar case includes tempering Damascus sword blades by running red-hot steel through the body of a surplus slave (when slaves became expensive it was found that oil would do the job as well). It was once thought necessary to throw a virgin into the molten metal for casting a suitable peal of temple bells in ancient Japan (they later found old bones would supply the potassium required). These examples serve to illustrate that science can evolve out of primitive empirical observations.

Although systems for generating artificial electrical fields and negative ions already exist and have successfully demonstrated possibilities in combating fatigue and allergies, such systems have not yet been employed in this country to any extent other than in ion environment for well-being or dust precipitation. Optimum results require use of a negative ion generator at one end of the living quarters and a positive ES field generator at the other in order to keep the ions moving, as in the natural earth environment. Typing efficiency, mental or light mechanical tasks, and auto driving responses improve in efficiency, and fatigue is delayed (Cristofv 1962).

Bioentrainment Possibilities

The magnetic field of the earth averages about 0.5 Gauss and has continuous pulsations of low magnitude at frequencies ranging from 0.1 to 100 Hz, peaking at around 10 Hz. This is known as the Schumann resonance (Schumann 1952), wherein the earth-ionosphere cavity acts as a natural resonator. This was probably much more powerful during the early stages of earth's development and may have played an important part in the origin and evolvement of life (Graf and Cole 1967; Cole and Graf 1973).

The typical 7-14 Hz alpha brainwave pattern for sleep and dreaming falls precisely in this range, and a relationship between these phenomena has been suggested by many investigators. This is known as biological entrainment by low frequency radiation (König 1971). Similar frequencies of light and sound pulses can trigger epileptic attacks, altered states of consciousness, and nausea. The step from external sensory stimuli to subconscious EM stimuli in entraining cerebral rhythms is not a radical one. For example, approaching storm fronts appear to have a local E-field variation of 3 to 5 Hz. The ion balance of the atmosphere and the ES field polarity are also affected by the storm front (Dewan 1969; Hamer 1965). Reaction time delay, headaches, general depression, and lethargy occur in weather-sensitive individuals. Paranormal abilities and events decrease (Wioske 1963). Accident rates of automobiles and aircraft may also be associated with these effects, especially if the driver or pilot is already overstressed or tired.

Bioentrainment which may be considered for enhancement or suppression of "psychic" ability is now used medically for treatment of hearing loss. Electrical induction of sound is introduced into the cochlea by use of audio signal modulation of the 100 kHz carrier frequency. Although those in the vicinity hear nothing, the subject near the antenna perceives sound as if through earphones (Laser Sound Systems of Glendale, California, and Intelectron Corporation of New York are currently conducting research on the electrical stimulation of hearing).

The ability of many individuals to hear radar microwave as a "buzzing like bees," is well documented, as are sporadic reports of "hearing" aurora displays and meteors passing. These reports were first dismissed as unfounded. The effects were subjective and not everyone heard them. Nurses who work in mental institutions described patients who are always trying to get away from "the terrible noise." Certain rooms or areas seem more quiet for them (electrical field null points?). Many people are in mental institutions or are psychologically afflicted because of hypersensitivity to electric fields (Wioske 1967). Russian investigators report that changes in hypothalamus activity can greatly increase the sensitivity to EM fields (Kholodov 1967).

A magnet at 60 Hz and 8700 Gauss held to the temple creates a visual light sensation called the "phosphene effect." This effect can also be induced by electrical frequencies and chemical, fasting, meditation, or fatigue techniques. Visual archetypes such as spirals and geometric shapes are often observed. These are strikingly similar to worldwide pictographs left by ancient man.

A person in hypnosis or mescaline intoxication can often perceive a static magnetic field through modification of visual images. A flicker effect is associated with a varying field. This is confirmation of Baron von Reichenbach's work on the sensitivity of ill psychics to EM fields, mentioned earlier. Not only did they suffer various aches and pains when a strong bar magnet was nearby but they could see the field plainly, in color, around a bar magnet in a totally dark room. Potential for electronic simulation of vision to aid the blind is seen in these effects (Garrison 1969; Knoll 1963).

Entrainment Psi

Puharich (1962: 211-26) and Vasiliev (1963) have noted the improved telepathy when the receiver subject was exposed to a (-) ion environment and (+) field inside a Faraday Cage. Beal conducted feasibility experiments on effects of a 2000-volt ES field on ESP card guessing. (Use of a similar, though lower [500] voltage positive field device in an auto seemed to decrease the onset of boredom, fatigue and improve efficiency on long drives.) It was assumed that the equipment might affect the statistical results of a large series of card guesses, using the Down-Through Clairvoyance test. The 2000-volt output disc was placed one inch above the head and a series of 1250 guesses performed for both conditions (equipment on and off). Completely blind tests could not be conducted because the subject could occasionally feel the hair rise as the disc was activated. The average of correct hits was plotted for each group of 250 guesses (10 card deck runs), giving 5 points to plot. Results were significant (Figures 1 and 2), but not as expected. With the equipment off better scores were made ($p \leq 0.001$) than with equipment on!

Effects of fields on brainwave activity are shown by Kholodov (1967), Presman (1970), and Sulman (1972), who note that depending on conditions, intensity, frequency, and location of the radiating antenna, brainwave frequency will be increased or decreased. Suppression of natural, spontaneously occurring alpha rhythm may have resulted from intense field exposure, thus reducing the number of "hits" when equipment was on during the test, if low frequency 7-14 Hz alpha is an indicator during better ESP results (Morris and Wheeler 1971; Lewis and Schmeidler 1971). The 2000 volt (-) d.c. radiating antenna was one inch from the top of the head, rather than the usual 50 to 60 inches (1.5 meters). At the normal distance, Sulman noted that the equipment reduced the alpha wave frequencies from 10 to 8, and that waves spread from the occipital to the frontal area,

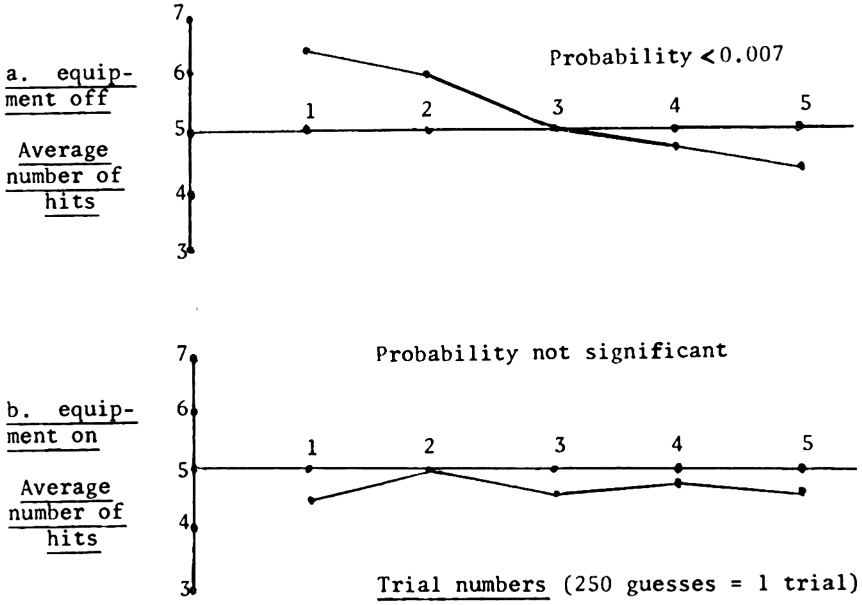

Fig. 1. Effects of a positive (+) d.c. field on Down-Through Clairvoyance test, Standard Run. Fig. 1-a, August 30, 1969, with equipment off (10 decks of Zener cards, 25 cards per deck, five duplicates of each symbol), 1250 guesses. Order of cards in shuffled decks are rapidly guessed, then checked for hits, then average for each point (250 guesses = 1 point) is computed. $p < 0.007$. Fig. 1-b, August 31, 1969, with equipment on. Positive (+) 2000 volt d.c. field on 7.5-inch diameter metal plate one inch above head. Otherwise, same testing characteristics. p = not significant.

increasing alertness; brainwave amplitude increased by 20 percent (Sulman 1972). At the time it was not realized that the one-inch distance was "overdriving" the brain, thus giving the opposite of the score results desired. Earlier tests obtained good results ($p = 1.3\text{x}10^{6}$) using stroboscopic red light synchronization of alpha waves between sender and receiver in telepathy (Speeth 1954). Two separate synchronized strobes were used and the brain waves driven at 8 Hz (monitoring EEG "evoked" potential).

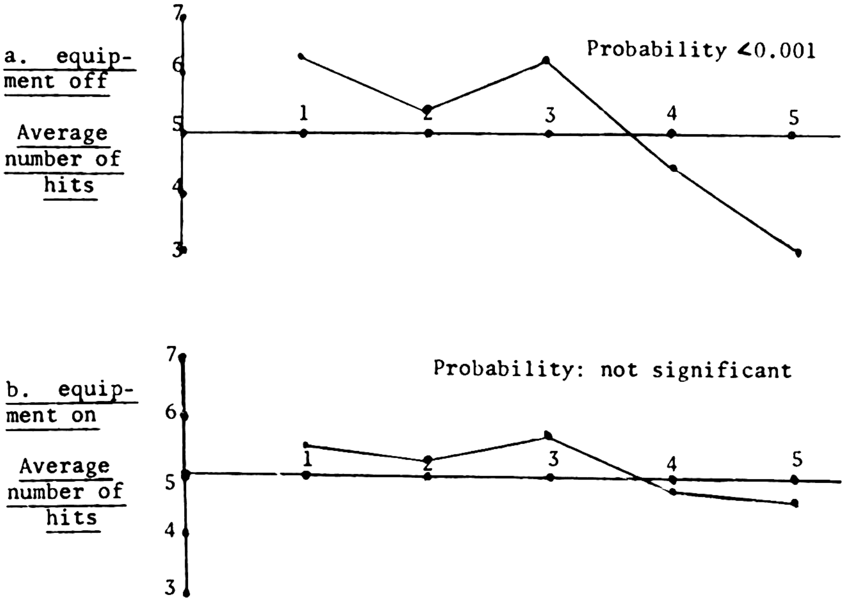

Fig. 2. Effects of a positive (+) d.c. field on Down-Through Clairvoyance test, Alternating Effects Run. Same as shown in Fig. 1, but with equipment alternating off and on. Started with one trail, equipment off, to establish a point; then equipment alternating. At end of 10 trials, ons were separated from offs and plotted separately. Fig. 2-a, September 1, 1969, trials with disk off. p = 0.001. Fig. 2-b, September 1, 1969, trials with disk on. p = not significant.

Monitoring Outputs of Living Systems

There is severe need to obtain physiological data without restraining the individual by sensors, wires, or rigid confinement. A noncontract means of detecting heart beat (EKG) has been developed by Shafer (1967) of General Dynamics Life Sciences. Known as the Field Effect Monitor (Shafer 1967; General Dynamics n.d.), this equipment consists of a copper plate sensing element, amplifiers, filter systems, and readout devices. This provides more freedom of movement and comfort for the patient, avoids anxiety, and saves time. Similar devices measure changing fields and are extremely sensitive to areas around televisions, rugs, clothing, people, and animals (Garner 1968; Baird 1971; Mulfinger 1970).

Electric field meters and ES scanners can monitor living system bioelectric fields and local environment, suggesting applications for mind/body/environment research in the near future. The equipment output can be fed into an area scanning system which, with suitable electronics of multiple fixed detectors and multiplexing, can produce a two-dimensional plane view in real time of the ES field potentials around living systems, showing how these potentials change patterns during disease and psychotic states. This can then serve as a biofeedback device. Selective electronic gating can be used to produce shades of grey (or color, if color enhancement is desired) on the recording display to indicate field intensity ranges of interest (Beal 1973b). Feasibility will be established for development of rapid imaging and recording equipment, similar to present infrared medical scanner systems. Results may show that this phenomena is an ES analogue of what is known as human "aura" (see Krippner and Rubin 1973).

'Witches" and Other Demoniacal Problems

Dowsing or water-witching, pipe-locating, and radiesthesia are all related ... and unexplained. One of the noted authorities in the field of radiesthesia is Rocard. A description of his work is paraphrased here:

> One builds a rectangular coil (1/2 x 1 meter) and sends a current through it to get a known magnetic field (4 milliGauss at center). A meter away a detector measures charges flowing in the coil. For the detector is a dowser: a human being equipped only with a divining rod. Rocard had shown by this experiment that a significant fraction of people can be trained by manipulation of a forked stick to detect spatial inhomogeneities of the order of 0.001 Gauss per meter. The connection with dowsing is through the magnetic fields set up by electrofiltration currents, a phenomenon familiar to the physical chemist. The last link in the scientific chain, namely identifying the detecting mechanism in the body, remains to be forged. Rocard wonders if nuclear magnetic resonance (NMR) can be the physical

> basis. Nothing whatsoever of the occult exists in Rocard's approach. He is simply looking for a physical explanation for the physiological action of the dowser. He thinks it is magnetic. Be that as it may, he has given a definite and detailed description for a test, the first objective one ever proposed for dowsing. (Montgomery 1964.)

Mineral deposits and ore bodies hit by cosmic radiation re-radiate secondaries and change the EM field at the surface. NMR devices are now being used to detect these variations in prospecting for oil, ore deposits, and water in the field, as well as in identifying cancerous tissue.

"Psychotronic machines"--pipe locators of the "L" shape, the forked dowsing rod, the vibrating rod "aura meter," and similar but more complicated machines (Abram's Box, the de la Warr Radionic Diagnostic Instrument, and the Pavlita Psychotronic Generators) are similar to the "witching rods" in that they seem to require the man-machine relationship, where the human being is part of the detector circuit, involving variations in the sense of touch. They act primarily as amplifiers, resonators, antennas, or psychological transfer mechanisms (placebos). The machines do not, in themselves, perform any understood function within the present framework of physics. They appear to have been developed deductively and instinctively. Relationships seem to exist between shape, materials used, texture, arrangement of components, and size of components. Persons using this equipment appear to act as receivers of subliminal information. These machines may also serve as "talent filters" since psychic ability appears to be a latent talent and this equipment seems to work best for the person who is most sensitive psychically (Daniels 1970).

Let us now indulge in some more "constraint removal analysis" in metaphysics. How about the controversial area known as "human aura?" "Aura" is defined as a distinctive atmosphere surrounding a person and seen in colors which indicate physical and mental conditions and interactions, by those persons who claim to visualize this phenomenon. "Aura" may eventually be revealed to be a type of complex biological field radiation, like the thermal radiation patterns now seen in color on the body when infrared camera equipment is used. "Aura" seems more plausible when we call it "biological field radiation!" It is not our objective to reiterate the manifold aspects of the Kirlian phenomenon here, for these have been covered extensively (Krippner and Rubin 1973) and the medical anthropological aspects have been summarized (Long 1973). Seemingly related phenomena in anthropology and parapsychology have, however, been badly neglected.

"Fire-walking" is one of the more miraculous of anthropological phenomena, rendered somewhat less astonishing by its performance by non-magical fieldworkers in anthropology who later offer physicalistic theorizing on the subject (e.g., Foster 1955). Some form of ritual is required before an individual goes stomping out across the fire and red-hot coals. An altered state of consciousness is required; performing individuals may literally whip themselves into a frenzy, as experiments in electrostatic cooling have shown (Soderholm 1969; Kibler 1972). An ES field created by properly placed high-voltage (10-20 kV) probes can cause red-hot metal objects within the field to cool perceptibly. One theory for the sudden high rate of heat transfer is that the resulting ion flow causes surface turbulence. Another possibility is that, since energy is required to extract electrons from the heated material, there should be cooling when the thermions are emitted (electric wind effect). If so, the removal of electrons then causes the observed cooling. Whatever the explanation, the demonstrations are impressive. The ES cooling process may not provide us with the exact explanation for the phenomenon of fire-walking but it is the closest yet. It should be noted also that PK phenomena often are accompanied by a cooling effect. Crookes reported this in his investigations of D. Home in the 19th century. Thermal effects were recently reported from Stanford researchers in experiments with psychic Ingo Swann.

In some of the psychokinesis (PK) experiments with Alla Vinogradova in Moscow, in which she moves various objects about on a dielectric surface without touching them, there is sufficient ES energy around the object to light a small neon glow tube (Tiller 1973). Measurements with ES field meters indicate potentials of at least 10 to 12 kV/ meter. Field pulsations are synchronized with the respiration rate heart, and alpha brain rhythm. Between Vinogradova and the object there are no fields and frequencies present! Energy appears and increases in intensity as one approaches the object. This is action at a distance, but not via our familiar kind of space-time laws which would indicate that there should be energy manifestations detectable all the way from the operator to the object.

Aside from the fact that we seem to be dealing with a very different kind of energy, neither EM nor sonic, this energy seems to function in a frame of reference which is not the one we're used to considering. It should therefore be possible to build up a high potential ES field on the body surface and project it as required. This will require an altered state of consciousness: perhaps hypnosis or autogenic training with biofeedback equipment.

Russian Radio

Extensive anthropological psi research has purportedly taken place in Russia in recent years. Aside from the experimentation described above, from American sources, knowledge of this research is clouded by a suspected unreliability of Russian sources and lack of expertise on the part of some American researchers (e.g., Ostrander and Schroeder 1970). While readers must make their own reliability judgments here, these Russian claims (Mutschal 1968; Velinov 1968) should be noted for future validation:

1 Several research centers have been established specializing in biological radio communication (telepathy) experiments on an academic and scientific level.

2 Teams of scientists--physiologists, physicists, psychologists, mathematicians, cyberneticists, neurologists, and electronic engineers--have been organized to investigate telepathy and devise aplications.

3 Experiments involving long-range thought transference have been conducted--Leningrad to Moscow (600 km) and Moscow to Tomsk (4000 km). The technique used a light hypnosis of both sender and receiver and transmittal by the sender of the highly charged hallucinated emotional signal that he was physically beating up his friend (the receiver, who was 4000 km away). The Russians claim the same brain wave form (signature) was transmitted from sender to receiver, but interpretation by the receiver of the message was not reliable.

Telepathy information transmittal characteristics were: (1) the rate of information transmission varies between 0.005 and 0.1 bit/sec; (2) the rate of information transmission depends upon distance of travel, ranging from 0.1 bit/sec for several meters to 0.001 bit/sec for 4000 km;

(3) in telecommunication, normally only qualitative symptoms eliciting some kind of sensation (shape, color, hardness, etc.) are perceived; (4) the best perception of telepathic information occurs when the messages are short (up to one minute). Transmission of simple, relatively brief, coded combinations of elements, image, emotion, etc., appears to be the proper way of handling telepathic information.

The Sorcerer's Apprentice

Extrasensory perception is an ability, like talent in any area, which should be improved with use and training. Teaching machines and biofeedback equipment are now being used with some success as ESP training aids (Tart 1969). As an example, the Model 100A ESP teaching machine can be used either as a test instrument to measure ESP ability or as a feedback system for enhancing ESP ability. It is an improved version of the machine described by Hurt and Targ (1972). The 100A contains a random target selector which has no moving parts and which gives the subject no sensory clues to the target selected. The machine generates targets at a rate determined by the subject so that choices are not "forced."

In the clairvoyance mode 100A selects a target and stores its selection internally. Then the subject tries to sense clairvoyantly the chosen target. In the precognition modes, the Model 100A doesn't select a target until one-fourth second or one second after the subject has made his choice. This gives the user an opportunity to determine if there is any change in his perceptual ability as he attempts to look further into the future. The temporal distance is zero in the clairvoyance mode, increasing to one-fourth second and one second in the two precognition modes.

In all modes of operation, the subject has a choice of five pushbuttons to indicate his choice of target. Four of the pushbuttons correspond to the four targets (which are color transparencies). The fifth pushbutton is a PASS switch. The PASS switch is used when the subject does not have an ESP "feeling" for the correct target. Pushing the PASS button causes the machine to choose another target without changing the TRIALS score displayed on the front panel. Pushing any of the five buttons causes the target chosen by the machine to light up. If the subject's choice is a correct one, a bell rings and one is added to the HITS score. In any case, if one of the four target buttons is pressed, one is added to his TRIALS score.

In addition to the four target transparencies, there are five encouragement legends which are also transparencies. The encouragement legends light up for 6, 8, 10, 12 and 14 hits. The first encouragement legend, the one which lights up for six hits, will remain lit for seven hits and then goes out for eight through 15 hits. The other four encouragement legends are "latching," that is, they will remain lit once they are turned on regardless of the total number of hits accumulated, until the RESET button is pressed.

The Model 100A is designed for "runs" of 25 trials. Once 25 trials are accumulated on the trials counter, the last target selected will remain lit even after the target pushbutton is released. The RESET pushbutton will light up to indicate that no further trials are possible until the RESET button is pushed. Until the machine is RESET, pushing any of the five selector buttons will have no effect on the machine.

This equipment can also be used in telepathy experiments. For this mode of operation, the telepathy adapter accessory is plugged into the Model 100A's output jack. The accessory box displays the target chosen in the clairvoyance mode to the sender while the receiver uses the pushbuttons in the usual way to indicate his choice of target.

It is apparent that through the history of ESP investigations, subjects who get no reinforcement in the testing procedure deteriorate in their ESP performance; those who receive reinforcement improve. It is this latter group of experiments which prompts the demonstrated success in the teaching of other skills through the uses of reinforcement techniques.

In experiments combining the observation of brainwave activity with a measurement of ESP ability, it has been found that the subject's best performance on ESP tests often occurs at those times when their alpha production is the greatest. It therefore seems desirable to combine the use of alpha feedback with the use of ESP teaching machines to find the relationship between a subject's ability to achieve brainwave control and his ability to learn ESP.

Recommendations

We should be studying how to evaluate and enhance psychic abilities in a controlled geophysical environment, complementing the internal body environment by the proper ties with the nerve network, blood chemistry, glandular chemistry, and body time. Possibilities for effects on brainwave frequency and bioentrainment of brainwave rhythms with effects and sound can be induced with suitable power and frequencies. It will be necessary to monitor and record a large number of variables (such as EEG, EKG, EM and ES biofields, respiration, temperature, blood pressure and chemistry, geophysical EM and ES fields, and atmospheric changes--temperature, pressure, humidity, ion concentration, light spectrum and sound levels, sun activity, and moon phases) to determine the patterns unique to a particular psychic event. Suitable equipment, evaluation techniques, and facilities (fixed and mobile) should thus be developed as first priority.

Summary

Many qualitative data exist, going back to the beginning of history, about psychic effects on living processes, people, domestric animals, plants, and inanimate objects. But there are few background data in terms of astrophysical, geophysical, psychological and physiological conditions required to develop the effects. Evidence in arcane and ancient literature is clouded by dogma, ritual, semantics and secrecy. However, empirical evidence does exist showing that a number of ancient cultures knew about the vectorial relationship existing between the EM field direction and the neuraxis, and that the geomagnetic field appeared to affect the functioning of higher neuronal centers. The magnetic field orientation in tests of living systems is often overlooked in our present culture, but was considered most important by the Chinese, for example, who felt that beneficial health, mental, and spiritual qualities could be obtained by proper geophysical orientation of homes and religious shrines in relation to the earth's magnetic poles, subterranean streams, geology, and topology. Thus, reappraisal of the historical and ancient literature in myths, legends, religious systems, and philosophies, where applicable in the field of psychic phenomena, is warranted.

Concepts of man and the universe, and man in the universe, motivate our thinking and actions on earth. Are contributions to such concepts unimportant to the quality of life we strive for today? On the contrary, they are basic to the definition of what we mean about quality in life. Without a growing precision of our definition of the universe, external and internal, objective and subjective, material and spiritual, and the elements involved, we cannot hope to improve more than the physical aspects of day-to-day living.

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Editor's Conclusion

Beal says: "Evidence in arcane and ancient literature is clouded by dogma, ritual, semantics and secrecy." This is reason enough for the anthropologist to be discouraged from studying parapsychology. But could not Beal have made a similar statement to the effect that "the evidence in anthropological literature" is also clouded by dogma, semantics, and all the rest? How many anthropologists have provided insights about the essence of primitive and ancient medicine comparable to Beal's?

As anthropologists have gained greater proficiency in blood typing, genetics, biostatistics, and biopsychology, they have also become more confident in their abilities to know, understand, and interpret disease and medicine. One hopes this confidence is warranted, but even if it is, it unfortunately leads to increasing specialization and devaluation of interdisciplinary research. This comes at a time when new vistas in electronics and physics are gaining great repute in helping to solve medical problems. Hence the danger is that anthropologists will work more and more in a vacuum and drop out of the forefront of medical research, or utilize their skills only to complement physicians' traditional techniques, concepts, and values, without ever contributing anything new.

Paranthropologists, taking leads from Beal, stand in a unique position to make important new contributions to medicine. By proper validation procedures in fieldwork, they stand to gain again that enviable position of being able to tell the physician and biologist something new about primitive, or even modern, peoples.

Just as medical anthropologists and sociologists have said: "physician, heal thyself," so must we now undergo a transitory phase in behavioral science during which we enlarge our repertoire to include new data and insights regarding human nature. Part of custom will always remain in the realm of the supernatural (some questions are simply unanswerable even though we demand explanations), because concepts of the supernatural are adaptive in themselves. We must no longer be deluded, however, into thinking that primitive concepts of nature are ipso facto wrong, that all of "the supernatural" is based on erroneous suspicions.

The task at hand is to reexamine primitive beliefs in conjunction with modern technology* and determine what evidence exists for their validity or in what ways concepts of these diverse systems support one another. This will take us into new, exciting, perhaps frightening areas of study, but the dividends will more than compensate us for the risks.

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*Details on equipment mentioned in this article, with manufacturers' addresses, are in Beal's article, "New Advances in Parapsychology," the Feature Session of the 1974 Institute of Electrical and Electronics Engineers' International Convention Technical Papers.

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Part III

Psi, Cognition, and Communication

PSI-SPEECH COMMUNICATION AND COGNITION

Walter Greist

Editor's Comments

Greists's chapter is distinguished by its great relevance to anthropology and by the ingenuity and simplicity involved in the research design. Its basic finding, that speech enhances telepathy, while not in contradiction to previous research, is alarming in its implication. Parapsychologists have unconsciously tended to assume that language and psi were independent and perhaps mutually exclusive functions. This was partly because of the need in earlier ESP research to avoid any clues which might lead to results which could be ascribed to something besides pure extrasensory perception.

Indeed, it is logical (but not necessary) to assume from an evolutionary or phylogenetic standpoint that non-human forms of life, from one-celled plants and animals to the complex but language-less Pliocene or Miocene apes which were man's ancestors, probably have greater extrasensory facilities than humans. As I shall discuss in a later chapter, it has further been assumed that primitive peoples have naturally greater extrasensory powers than civilized peoples, whether for genetic or psycho-cultural reasons. But no research supports this contention and some evidence suggests just the opposite: that psi powers are on the increase.

Wallace (1970) has discussed the relation of cognitive mazeway resynthesis in individual humans, naming it as a central factor in culture change. Greist concludes his chapter by relating the concept of mazeway directly to phylogenesis, carefully warning that the reader's own views on parapsychology may influence his interpretation of the experimental results presented here. I encourage the reader to ponder the many other interpretations of the data--beyond the few which Greist himself suggests. The data relate directly to Kroeber's discussion of language in his modification (in The Nature of Culture) of Durkheim's "superorganic," and thus have a potentially greater relevance to primate ethology and the question, 'What made us human?" than to cognition per se.

* * *

Introduction

This chapter presents a communications model which suggests that our species greatly extended the information exchanging power of pure, primitive psi through the development and use of linguistic aids. Conversation appears to be psi-structured by bursts of coded, verbal references to particular aspects of the group's psi experience. A linguistic code increases the ability of a speaker to rapidly and accurately invoke a series of specific psi patterns, enabling people who have learned a common language to share more complex and subtle psi patterns of thought.

The methods of investigation employed in the development of this model were three: participant observation of psi processes, inductive reasoning from the scientific work undertaken by parapsychologists, and controlled experimentation.

Participant observation refers to the process of using thought observation and speech feedback as instruments to monitor one's psi interaction. The participant observer can develop sensitivity to psi processes through a technique that utilizes a form of biofeedback training. To do it, one can begin by resting in a quiet, darkened room with an empathetic friend. Without any attempt to direct thoughts toward anything in particular, both persons simply observe and remember their mental imagery. Before the thoughts become too numerous to keep track of, each verbally catalogues his thoughts for the other. Noting the overlap in the two series of images provides feedback, indicating when psi interaction may have been occurring. Paying attention to the characteristic feeling of those moments when similar images are present will lead to an intuitive knowledge of what psi feels like. In this way, one can learn to measure one's psi interaction in a very direct way.

The first time this was done by the researcher, he learned three things about psi: the fundamental realization was becoming aware of psi itself--a process so subtle that he had previously overlooked it. Secondly, he observed that thoughts with a psi component possessed the same subjective feeling or quality as the thoughts he had always had, opening up the logical probability that he normally interacted with others on a psi level without realizing it. Previously, psi interaction had been camouflaged by his enculturation, which provided him with a paradigm for reality that excluded psi.

The third characteristic of psi interaction of which the researcher learned is the tendency for psi stimuli to become manifest through the existing cognitive concepts of one's personal mazeway. ("Mazeway refers to the entire set of cognitive maps ... that an individual maintains at a given time.... Mazeway is to the individual what culture is to the group.... It consists of an extremely large number of assemblages or cognitive residues of perception and is used by its holder as a true and more or less complete representation of the operating characteristics of a 'real' world" [Wallace 1970: 15]). For example, when the researcher visualized a Maine farmer standing next to a stone wall with a Chevrolet passing on the road, his Swiss roommate was thinking of a Swiss farmer standing behind a Swiss-style wooden fence, watching a Renault drive by his field. The psi thought-pattern they shared was translated or distorted into personally meaningful form by each of them before it was accessible on a conscious level. This reorganization of psi stimuli to fit existing concepts is a very significant attribute, and it played a prominent role in the development of the proposed model.

Participant observation of psi process can become one's focal point of attention in any social setting. The observation of psi process and its relationship to culture over the last dozen years has led the researcher to conclude that the sculpturing of psi stimuli to fit one's personal cognitive system allows one to maintain a consistent world view and an integrated pattern of action during psi interaction. Although psi is a major component of our ordinary thinking, the world is not consequently transparent, as one might expect, for culture is a series of mazeways which open paths for selected, structured psi interaction, while simultaneously erecting walls that render opaque the world of psi at large. To be shared in an undistorted form, a telepathic bond must simultaneously find congruent cognitive constructs in different mazeways. According to the model presented here, facilitating this congruence is the function of speech.

In verbal exchange, the speaker offers the listener a gestalt which the speaker thinks will stimulate the listener to interpret their psi exchange in a manner close to the speaker's own thought. For example, when the researcher and his roommate were thinking about their rural scene, had the researcher said, "I'm thinking about a scene in Maine," the psi content of their communication--the farmer, fence, and automobile--would have been mutually New England in style, for the appropriate cognitive constructs were also known to his roommate. By clueing his roommate into his gestalt, all of his psi stimuli would have become available to his roommate in a more congruent form. Speech would have provided a coded general reference for the communication, with psi filling in the feeling and detail.

Paradigm Visualization

Aspects of psi communication which are relevant to understanding the experimental work reported here are schematically represented in Figure 1, below.

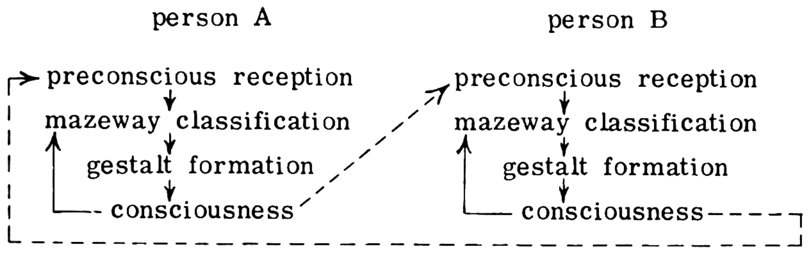
person A
person B
preconscious reception
mazeway classification
gestalt formation
consciousness
preconscious reception
mazeway classification
gestalt formation
consciousness

Fig. 1. Thought Communication

Figure 1 represents the flow-pattern of psi communication between two people. An individual's initial reception of psi stimuli occurs on a pre-conscious level (see Rao 1966; Rhine and Brier 1968: 91, 261-2; Ullman, Krippner and Vaughn 1973).

Raw psi stimuli must be classified, interpreted, and integrated into the percipient's existing mazeway before he can usefully think about them. This reorganization of the pure stimulus to fit the percipient's perception habits and defenses during gestalt formation facilitates the integration of novel stimuli into the constructs of his world view, enabling a quick and appropriate response. However, this reformulation potentially introduces considerable noise into the system. To the extent that stimuli and cognitive constructs are not isomorphic, misunderstanding results (see Carington 1940; Eisenbud 1970; Freud 1922, 1933, 1943; Ostrander and Schroeder 1971: 336; Sinclair 1962). The end product of gestalt formation is consciousness, where the psi stimulated thought is blended with the other thoughts that form the individual's conscious focus.

Research Goals and Operations

The model's pivotal point, which was the focus of the testing procedure, is the hypothesis that when speech and psi are functioning as a unified system, their communication power is greater than the isolated functioning of the parts.

The instruments used to test this hypothesis combined the statistical advantages of the Zener ESP card developed at Duke University with the interest-sustaining features of non-repetitive targets. They were designed to measure the ability of speech and psi to communicate information beyond the boundaries of the significata of a speaker's words, both separately and in conjunction. For the first experiment, three series of short anecdotes were recorded on tape. In each anecdote, the sentence containing a final detail was unfinished. On a mimeographed answer sheet, five plausible sentence completions were written for each incident. In each of the experimental situations the participant's task was to choose the correct completion. Their ability to identify the correct completion served as the first measure of our communication.

Separate experimental situations were created to independently measure the communication power of psi and speech--as separate variables and in combination. To measure the power of psi, the researcher listened to the first tape of ten anecdotes on the tape recorder's ear monitor in the presence of each participant. This was intended to aid the researcher's concentration on the stimulus material without giving any audio clues to the participant. This was done in a serial fashion--there was never more than one participant being tested at a time in any of the situations. The participants had to rely upon the researcher's psi stimuli to direct their selection of the correct answer.

To measure the power of speech, each participant listened to another set of taped, interrupted anecdotes without the presence of the researcher. They were instructed to use any available clues to aid their selection of the correct anecdote completion.

The third situation was designed to measure the effectiveness of psi-speech (the combination of psi and speech). In these sessions, the researcher and participant listened to a third set of ten recorded anecdotes together. In this way, both standardized speech and related psi were to be available to aid the participants in their multiple choice task. The taped anecdotes were systematically rotated among the sessions to randomize any unevenness in the difficulty of the stimulus material.

The second measure of our communication in each of the three situations was made possible by the notes written by the participants after receiving the stimuli, but before they viewed the multiple choice completion page. The participants were instructed to make up three plausible completions for each anecdote, which they thought might reflect the correct answer. They were to do this in the two situations involving speech stimuli, and they were to write down notes concerning whatever they were thinking in the pure psi situation. The notes produced in the two speech situations were re-typed by the researcher on slips of paper--that is, the notes of each participant for each anecdote were typed on separate slips. All of the notes pertaining to an anecdote, from both situations, were shuffled together. A research assistant was told what each correct completion was and instructed to separate the notes which were written with the aid of psi-speech from those aided only by recorded speech. If the hypothesis is correct, the notes aided by both channels of communication should more accurately reflect the correct completion. Hence, the degree of correspondence between the notes and the correct completion was the criterion for sorting the notes into two piles. The research assistant's success in correctly sorting the notes provided a second comparison of the communication systems.

To make the research process easier to visualize, a sample anecdote, along with the responses of the participants, is reproduced below. This particular anecdote was chosen because the participants' responses to it followed the expected pattern more clearly than with any other. The taped anecdote was:

> One time, when Ellen and I were talking in the Himalayan foothills with our friend Amanda, we spent the night in a Forest Rest House built by the British for rangers on patrol. The next morning, Ellen remained near the rest house taking pictures; she was pregnant with Cedar at the time, Amanda and I went hiking on up the ridge. As we approached the high pass of our destination....

The tape was interrupted at this point, and the participants were asked to think up and write down possible completions before looking at and selecting one from the mimeographed multiple choices:

> a) we both felt tremendously hungry and were dismayed to discover that we had neglected to bring along the food.
> b) a man appeared from the woods and invited us to his small house, just beyond the pass.

c) about twenty monkeys raced through the trees off to our right, making a terrific amount of noise.
d) a hailstorm broke out while the sun continued to shine, filling the valley with a magnificent dazzle.
e) we noticed a large area of blossoming rhododendrons, and Amanda spent the next half hour photographing them.

The anecdote completion the researcher was trying to convey to the first two-thirds of the sample group through psi stimulation was the hailstorm that broke loose in the sunshine. The twenty participants (# 1, # 2, etc.) responded to this anecdote with the following notes. (Their subsequent multiple-choice selections appear in parentheses after their notes.) Those aided by psi-speech wrote:

1 "she fell; we saw the sun shining through the pass; we saw a huge hole-like cave" (hailstorm)

2 "view was beautiful" (hailstorm)

# 3 none (hailstorm)

# 4 "a black cloud came up; we met monks coming down the trail; it started to storm" (hailstorm)

# 5 "not people, sunrise, maybe snow; rock-slide? sound - bird, animal, wind" (hailstorm)

6 "I could see Ellen below; or a rock slide; Ellen called" (monkeys)

Those participants who encountered this anecdote in the pure psi situation wrote:

# 7 "woman--woman in nature" (man appearing)

# 8 "bread; wine" (hunger)

# 9 none (hunger)

# 10 "animals--perhaps goats; mountain, cabin" (man appearing)

# 11 "the idea of light" (hailstorm)

# 12 "walking" (hailstorm)

# 13 "the Taj Mahal; trees; colors in the sky (hailstorm)

Those who heard the tape without accompanying psi stimulation wrote:

# 14 "we turned to look back; we saw some other Americans; the path vanished" (rhododendrons)

# 15 none (hunger)

# 16 "we met some men; we saw a wild animal" (monkeys)

# 17 "she stumbled and fell; we saw several people heading up also; I thought of Ellen and was sorry she could not see what we were seeing" (hunger)

# 18 none (monkeys)

# 19 "we met a wild tiger; we were stopped by officials; Amanda fell and hurt her leg" (man appearing)

# 20 none (hunger)

The first test was a simple statistical one. Five of the six participants who listened to the tape in the presence of the researcher, giving them the aid of both recorded speech and psi stimuli, selected the correct completion: the hailstorm. Of the seven participants who had to rely on pure psi to aid them, three selected the hailstorm. Of the seven who listened to the tape without the complementary psi, none chose the hailstorm. The number of correct answers--five out of six for psi-speech, three out of seven for psi, and none out of seven for speech--were added to the correct answers generated by each of the other 29 anecdotes and the totals compared.

The second procedure of analysis can also be clearly illustrated with this example. The five sets of notes generated in the psi-speech situation were typed on cards and shuffled with the four sets that were produced in the pure speech situation. A research assistant who knew the correct completion sorted the notes into two piles; the five sets which she judged to be closest to the hailstorm she assumed were produced with the aid of psi-speech, and comprised one of the piles.

The task of identifying the situation in which the notes were produced was relatively easy for this anecdote, and the assistant was able to correctly sort them all. The words, "sun shining through the pass" (participant # 1), "view was beautiful" (# 2), "a black cloud came up; it started to storm" (# 4), and "not people, sunrise, maybe snow; rock-slide? sound--bird, animal, wind" (# 5) all reflect comparatively undistorted psi communication in an obvious manner, referring in considerable depth to the researcher's thought. The set of notes produced by the sixth participant, like that of the fifth, includes the image of a rock slide. The assistant was able to recognize the visual aspect of many items falling, and the roaring sound, as attributes that hailstorms and rock slides have in common. The rock slide image was stimulated by the psi image of a hailstorm, but emerged in distorted form. Recognizing distorted images, and separating them from the notes that were stimulated solely by verbal association, was a more difficult task to perform for the other anecdotes, where the distortion was greater.

Twenty persons without any psi training or special psi abilities participated in this experiment.

Analysis of Results: Experiment I

The first statistical procedure which compared the sum total of correct and incorrect multiple choice completions generated in each situation with the expected chance distribution of answers indicated that the participants as a whole were not able to score above the level expected by chance in these situations. (Space limitations prohibit discussion of this failure in experimental design.)

The second procedure indicated that the system of psi-speech produced the most accurate communication. When the research assistant was asked to divide the participants' notes into two piles, she was able to differentiate the notes generated in the psi-speech situation from those that had only the aid of pure speech, at a significant rate. Of the 328 sets of notes, she assigned 182 correctly and 146 incorrectly. A chi-square analysis indicates that there is a probability of less than .05 that this distribution would occur by chance.

	observed	expected
correct	182	164
incorrect	146	164

$n = 328 \quad P < .05$

$$X^2 = \frac{(182 - 164)^2}{164} + \frac{(146 - 164)^2}{164} = 3.96$$

Table 1

Note differentiation: Speech/Psi-speech--Experiment I

This suggests that the hypothesized increase in communication between the researcher and participants when speech is given depth of meaning by psi did occur under the controlled conditions of Experiment I. Speech with a psi component brought the participants' thoughts closer to the researcher's.

Experiment II

The design of Experiment II was quite similar to that of Experiment I. It compared the ability of participants to complete descriptions given via the medium of pure speech with descriptions given via the psi-speech system. This was a less ambitious experiment, designed to indicate whether or not the modifications in the instrument would make it more sensitive to the actual communication which occurred during experimental sessions. Because of time constraints it used a smaller sample and did not measure unaided psi communication.

The most significant difference between the second design and the earlier one was the spontaneity of speech that was incorporated into the psi-speech situation. In this situation live speech was used instead of recorded speech. Rather than being fossilized on tape in a form which was inevitably partially irrelevant to the on-going psi interaction, the researcher's speech in this situation was free to function as an interpretation of our common psi pattern as it spontaneously developed in the session. This alteration was a response to the realization that psi is bi-directional. Psi is not a possession which can be controlled like limbs. One influences its shape, but a person cannot function as an independent source; the outflow of a lake is dependent upon its incoming streams. The photographs which were used in this experiment as target material acted as Rorschach designs into which our developing thought-patterns could be projected by the researcher, and linguistically shaped into a mutually recognizable form. Because the resulting speech was relevant to our psi exchange, the participants found the spontaneous speech useful in selecting the correct answers.

A second significant difference was the replacement of the anecdotes with photographs to serve as the target material. An analysis of the responses to the individual anecdotes in the first experiment revealed that completions with a vivid sensory component were more successful than items with an abstract completion. It was felt that photographs would take advantage of this characteristic.

To measure the efficiency of the psi-speech system, five photographs were described to each of five participants by the researcher, as the researcher looked at each photograph. The description of each mentioned most of the major features, except for one important detail. A print of that detail appeared on the participant's answer sheet, along with four equally plausible photographic details from unrelated negatives. The correct detail was conveyed via psi channels to the participant. The participant was asked to guess which of the five details completed the picture at which the researcher was looking. The accuracy of the communication was measured by the participant's ability to identify the correct completion of the picture described.

To measure the efficacy of speech without its psi dimension, each psi-speech session was recorded on tape. These taped descriptions of the photographs provided the verbal material used by the participants in the pure speech situation to aid their selection. After listening to a taped description without the researcher's presence or psi stimulation, these participants also tried to identify the detail which completed the picture. Differences in the participants' ability to identify the correct completions and the rates of correct answers expected by chance were attributed to the presence or absence of psi in the speech system.

Ten participants cooperated in this study. Five of them serially listened to live descriptions of five photographs in the psi-speech situation. Without the researcher's presence the remaining five listened to one of the five tapes recorded in the psi-speech sessions. (Each listened to a different tape.) This design generated 25 measurements of communication in the psi-speech situation and 25 measurements of pure speech.

Analysis of Results

In the psi-speech situation, the participants were able to identify 11 of the 25 details correctly. By chance alone, one would expect five correct answers. A chi-square analysis indicates that this distribution is significant at the .01 level. See Table 2.

	observed	expected
correct	11	5
incorrect	14	20

$n = 25 \qquad P < .01$

$$X^2 = \frac{(11 - 5 - .5)^2}{5} + \frac{(14 - 20 + .5)^2}{20} = 7.31$$

Table 2

Psi-speech--Experiment II

When the other participants listened to recordings of these sessions in the pure speech situation, without psi, they guessed eight of the 25 details correctly. In this situation, one would also expect five correct answers by chance alone. A chi-square analysis indicates that this deviation can be attributed to chance variation (i.e., $p > .05$). See Table 3.

	observed	expected
correct	8	5
incorrect	17	20

$n = 25 \qquad P > .05$

$$X^2 = \frac{(8 - 5 - .5)^2}{5} + \frac{(17 - 20 + .5)^2}{20} = 1.56$$

Table 3

Speech--Experiment II

The results outlined in Tables 1 and 2 offer statistical support for the hypothesis. The psi-speech system generated communication at a statistically significant level. The pure speech system did not.

Conclusions

In this paper, the researcher has endeavored to suggest how an approach to communication informed by a parapsychological and anthropological perspective can generate a novel model of human interaction. A pivotal facet of this model--the systemic relationship between psi, speech, and language--received attention through experimental testing. In the first experiment, the open-ended description completions of participants in the psi-speech situation reflected the correct completions more accurately than did the completions of participants in the pure speech situation. In the second experiment, the psi-speech system of communication enabled participants to identify photographic completions at a level above that expected by chance, while the speech element of this system, by itself, did not enable participants to score at above chance levels.

Readers who actively incorporate a parapsychological perspective in their mazeway may decide that the hypothesized relationship between speech, psi, and language offers the best explanation of the observed experimental results: linguistic codification of psi measures reduces distortion during mazeway classification.

If speech and language function as secondary elaborations of our phylogenetically ancient psi system of communication making it vastly more efficient, then further investigation of their relationships would significantly expand our understanding of communication and the origin and dynamics of cultural systems in general.

* * *

Editor's Conclusion

Greist's spectacular results strongly suggest that ESP and the spoken word act synergistically. This is impossible to prove beyond question. The results cannot be accepted until verified by other researchers. Even then, from the standpoint of quantification, it is unlikely that we will know how much of the end result is from pure psi and how much is from pure language. But if psi is a part of the human mazeway involving language, then this suggests several important new features in our understanding of the communication process: (1) psi is probably used more or less continuously in conversation, (2) psi is probably used in varying degrees according to the circumstance or time,

(3) psi is probably used relatively more by some speakers than by others, and, therefore, (4) the psi factor in speech, and not just language in itself, is of the essence in personal relationships. The implications of this for problems of learning disabilities, psychiatric disorders, and social problems are too vast to mention.

Both Kroeber and Wallace have presented quite different views about which peculiarly human cognitive elements govern human social behavior. Kroeber felt that language developed as an instantaneous event (relative to our total phylogenetic history), a point difficult to establish from fossil evidence. Recent research on fossil man and primate ethology does not support this view (or deny it), but if Greist's interpretations are correct it is reasonable to assume that the critical point ("not a link in a chain, not a step in a path, but a leap to another plane") which Kroeber discusses is not merely the appearance of some crude or meta-language but is in fact the simultaneous juxtaposing of two mutually complementary facilities: psi and speech.

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THE SAPIENTIAL CIRCLE
AND RECOGNITION OF VISIONARIES

Alexander Randall*

Editor's Comments

Randall describes a rather special version of what is commonly called a think tank. His Sapiential Circle is not comprised simply of thinkers, however, but involves those who are creative visionaries as well as thinkers. The concept of forcing an amalgam of visionaries with diverse backgrounds--scientific, technical, mystical, metaphysical, religious--is particularly harmonious with the idea of parapsychological studies within anthropology. The value of interdisciplinary research and the holistic approach has been appreciated by anthropologists for many years, but the spheres of each of us, whether scientists or mystics, have tended to remain closed and discrete.

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Introduction

I shall address myself to the designing of a cultural invention for the recognition and optimization of visionary and insightful mutant ideas.

It is my belief that mutant ideas are central to the study of culture. Culture is a compilation of successful mutant ideas. Mutations in the belief systems of a culture occur when single individuals generate new perceptions of their existing reality at a given moment in time. As a filtering mechanism on a grand scale, cultures act to identify, synergistically transform, and carry into action those novel ideas and technological innovations which are deemed productive and useful. This is not to say that the natural selection of mutant ideas is the only way that cultures change, but that idea mutations provide the various possibilities open for cultural selection. While the forces of conflict, forgetting, and borrowing are all at work in the evolution of a culture, there is still a dependence on novel ideas for input. The problem of how selection of ideas for diffusion takes place is a complex one.

Insight

Because insight is by definition a novel perceptual pattern, there is no simple pattern recognition system built into cultures for the recognition of insight, and its separation from noninsightful mutant ideas. In a broad sense, the entirety of a culture exists as the selection gradient through which ideas must pass to become new cultural standards. The very act of diffusion implies acceptance, and the greater the diffusion, the greater the acceptance. This is the traditional selection test of acceptance and diffusion. In order to design a cultural invention for the recognition and optimization of insight, we must recognize the kinds of mutant ideas which we may encounter and in which insight might be hidden.

Classes of Mutant Ideas

Mutant ideas can be novel and dependent upon new technology, very old and resurfacing from obscurity, or even latent in a culture in the form of a cult based upon a mutant idea. We can distinguish four classes of mutant ideas: productive, destructive, imaginary, and meaningless. These classes are overlapping rather than mutually exclusive. The distinctions between productive, destructive, imaginary, and meaningless will vary according to the receptivity of the members of a society to a given mutant idea. Thus, mutant ideas are classes by the receivers. Different cultures have different titles under which their mutant ideas are classed. Ideas can be seen as visionary, insightful, creative, mad, or eccentric. Likewise, the individuals who generate the mutant ideas are categorized according to the nature and usefulness of their ideas. Shaman, prophet, guru, inventor, creative genius, schizophrenic, and madman are some of the category names for mutant thinkers and their proneness toward certain classes of ideas. It is common for cultures to distinguish between insight and madness, with appropriate terms used to identify the individuals prone to one or the other. A distinction between insight and madness is a distinction between productive and destructive forces from a given culture's point of view. As Osmond (n. d.) notes, the only difference between a saint and a madman is to be found in the quality of their voices or images. Thus a culture draws distinctions according to the value or quality it places on a particular idea. How are we to know that the idea we classify as meaningless today will not be considered highly productive, imaginary thinking tomorrow?

The limit of our capacity to draw distinctions is the limit of our own capacity for insight. What we generally call insight is, I think, that idea which is so highly imaginative that the very utmost stretch of our imagination allows us to see that it is productive. When an insightful individual tells us his vision, if we know its truth within the depths of our own psyche, then we recognize it and remark at the insight. In a sense, insights are ideas which we already know to be true, but were not yet clearly formulated in our own minds. The closer another person's communication resonates with our own understanding, the easier it will be to recognize the communication. The insightful person is one who tells us tales of possible futures that are just on the fringe of our grasp. The slightest stretch beyond our own imagination plunges his tale into words and phrases we are unable to comprehend. We are left confused and call him mad while it may be we who fail. As Jung (n. d.) said, the flock of sheep perceive the sheep who is ten feet ahead as the leader, while they perceive the sheep one hundred feet ahead as the wolf. I define insight as a perception on a higher level of abstraction of those elements which appeared confused on lower levels. It is this kind of insight, sight into a larger reality, that we call the visionary experience. In designing a cultural invention for the recognition and optimization of insight, we must find the means to identify the individual whose mutant ideas contain a high proportion of insight.

The Insight Generator

My fundamental hypothesis is that the individual who is prone to the generation of insight is identifiable and recognizable, and that he or she will manifest particular psychological, biochemical, somatotypic, and parapsychological characteristics. As Harner (1973) has shown, and as case studies of schizophrenics and visionaries have indicated, cultures have ways of identifying those individuals who introduce the light of a larger reality. Different cultural inventions have been designed for the recognition and stimulation of insight generators and visionaries. Cultural selection gradients are designed to identify the visionary individual and place him in conditions that are most conducive to insight production. The maintenance of gurus in the Hindu tradition is one invention by which the Indian culture optimizes the output of its visionaries. In a similar manner, the traveling Sufi is maintained by his community as a source of novel ideas and commentary upon the community. Casteneda in his books on Don Juan has shed light on another system by which insight is generated and diffused. In a broader sense, Huxley (1955) has described various monastic, ritualistic, and religious systems by which communities have maintained and benefited from the visionary. In the Western tradition, the Quaker meeting of George Fox's invention was one of the means of facilitating visions, while the noble support of Bach by the Prussian royalty was another means by which mutant ideas were sponsored. While all these systems have permitted the generation and diffusion of mutant ideas, they have also suppressed many ideas which we now consider insightful. Socrates chose suicide in the defense of his insights, Galileo faced prison, and Leonardo da Vinci's great potential was often wasted in the construction of amusements for the Milanese royalty. One wonders how much visionary insight has been lost through time to the blunderings of our crude selection system.

Just as biological evolution stumbles forward, so too does cultural evolution, trying enough paths until a successful one is found. History is replete with examples of brilliant insights that were too early for their time, to the ultimate demise of the visionary. It was the absence of understanding recipients that prevented a leap forward at that earlier time. While stories such as those of Leonardo or Galileo represent partial successes, we can only wonder how many insights have been lost forever because those who might have received and transmitted them were absent from the sphere into which these insights were introduced. Sadder still is the thought that at this very moment some insight generator is being misunderstood by those on the receiving end of his message.

Research for the Invention

In researching an insight recognition system, anthropology and especially parapsychological anthropology should closely examine the conditions around successful insight generators for the general set of characteristics which permits the formation and recognition of insight. Knowing these conditions and the nature of the individual prone to insight, we might optimize the environment around such individuals. We must bear in mind that as a necessary protection mechanism, cultures are naturally resistant to novel ideas. A mutant idea will have to be shown to be visibly superior to the status quo for a change to take place.

Parapsychological anthropology is in a unique position to productively reflect upon itself. On one hand the study of visionaries is a study of mutant ideas. On the other, parapsychological anthropology is in itself a mutant idea in the culture of science. If it is, in fact, insightful and productive, it will, in time, be accepted into the mainstream of science. However, what we learn from the study of the diffusion of insight in other cultures might profitably be applied to the diffusion of our own insight. Such is the case for the application of the cultural invention called the Sapiential Circle.

Temperospatial Perception

Osmond, Osmundsen, and Agel (1974), working on Jung's (1971) theory of psychological types and Von Uexküll's (1956) theory of Umwelt* or individual timespace experience, suggest that within the sphere of the total experience of the universe, each of our minds is but one point of view of the totality of possible experience. The suggestion is that while our experience of timespace is individual and unique, it can be grouped with that of others. In short, there is a topology of our positions in paranormal time and space. Our unique perceptions of the universe permit some people access to certain energy transformations which are inaccessible to others. The implication is that parapsychological phenomena exist as normal energy transformations within the larger timespace sphere, which in totality is inaccessible to each of us, but which, in part, is accessible to everyone.

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*This German word (meaning milieu [continued on next page]

Timespace can be generally perceived in terms of: (a) past experience, as in the individual who has full knowledge of the traditions and customs in his experiential world; (b) present momentary experience, or the existential here and now of a given moment and position in timespace; (c) the continuum experience of timespace from past through present to future, as in the individual who perceives process and order; and (d) the future, that is, the manifold potential for possible experience in the future. As individuals manifest discrete combinations of these temperospatial orientations, their potential for specific kinds of perceptions will be limited and specialized. The class of people whose psychic orientation is toward the future experience a psychic world that includes the potential for visionary experience. Those with sensitivity, skill, and conducive environments would generate mutant ideas concerning possible futures which can be incorporated into the selection filters of the larger culture. Conducive environments for these individuals may, for example, include stimulation with large bodies of knowledge, ingestion of psychedelics, and meditation.

In parapsychological terms, these people in their

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or environment) first appears in American science in Von Uexküll (1956), where it means the individual's unique perceptual world. This bubble-like time-space world limits the way each of us experiences the matter-energy of the larger reality, or "mind at large" (Huxley, 1954). It has been suggested that the Umwelt has a fundamental shape, called temperament, based on genetic inheritance and that cultural learning is a force which further shapes the Umwelt, while the Umwelt simultaneously limits that which is learned. Osmond notes that these Umwelten conform to the patterns suggested by Jung.

special psychic world with interest in possible futures, are the very mutant idea generators who, when successful, we call visionaries and insightful scientists. These are the people who stretch our imagination to its limits; but if their insight falls on unhearing ears, they are the people we crucify as charlatans.

The Invention

What is needed is a system that will: (a) be conducive to the generation of novel and unknown future visions; (b) be critical of those future visions in terms of their productive or destructive content; (c) be the tool to translate future visions into terms that are comprehensible and usable to individuals with different temperospatial perceptions; and (d) be open to possible insight in mutant ideas from novel sources.

In a general sense, the system must be open to new insight and able to translate novel insight into useful forms for the members of a culture whose timespace perception makes visionary futures and experiences difficult to grasp. One might envision a group of people whose fundamental task is to condense the acceptance-diffusion test through which ideas are normally filtered in a culture, and thus expand the scope of understandable ideas. This group of people would be representative of all temperospatial orientations as seen in the topology of psychological types. If a novel idea were appealing to all the types, with their divergent points of view, its chance of being successful for the larger culture would be enhanced. Because the group would be composed of individuals of different temperospatial orientation and of different abilities, the synergy of their own communication would yield variations on the insight that would be acceptable and understood by others on all levels of temperospatial perception. The group would extend the imagination of a culture to such a point that extremely novel ideas could be understood.

The Sapiential Circle

We may call such a group the _Sapiential Circle_. Coming from _Homo sapiens_ (man the wise), the Sapiential Circle is the wise group--constructed to represent temperospatial points of view. In looking at mutant thinkers in our culture it is clear that those we call productive have had such groups around them, usually in the sphere of their acquaintances. These friends provided input, output, and feedback functions for each other. The implication of the Sapiential Circle is that it recognizes the role that the visionaries play in a culture, but it also gives credence to the crucial role played by others of different temperaments in evaluating mutant ideas and carrying productive ones forward into action. The Sapiential Circle is an invention which, because of its all-encompassing timespace orientation, can select, translate, and carry to action those ideas most likely to succeed. It is, in the end, a tool for the condensation of time, such that the normal selection process by acceptance and diffusion can be hastened and insight can be transformed from an image into a usable plan of action. In a sense, this is only a partial Sapiential Circle. A truly viable Circle would have to include representatives of all the parameters upon which *Homo sapiens* varies who are involved in idea acceptance and diffusion. While this incarnation of the Sapiential Circle concerns temporal spatial orientation, future incarnations will concern somatotypes, biochemistry, and other psycho-social-biological factors, until a model Sapiential Circle can be generated.

History is full of rediscovered old ideas that might have been applied more prodigiously when they were new, but which were lost in the trample of the ongoing status quo. The history of the diffusion of an insight is a story of individuals with different temperospatial orientations synergystically accepting and modifying the idea, then passing it on using their own terms. Loosely known as the test of time, it is cumbersome and inefficient when it depends upon the random association of novel idea generators with idea translators and idea effectors. As a new idea emerges, we need a way to recognize it, nurture it, preserve it, and diffuse it. Such is the task of the Sapiential Circle--it is an invention to reduce the randomness, condense time, expand our imagination, and permit our expeditious evolution as a species.

Examples

In a very real sense, there has never been a Sapiential Circle, and at the same time every great discovery in science has been the result of the work of Sapiential Circles. This is not a contradiction, but a matter of defining the difference between the ideal and the actual. There has never been a real Sapiential Circle, as it is described in the paper presented at the Rhine-Swanton symposium (Randall 1974). It is in fact doubtful if such a gathering can ever be assembled. At the same time, there have always been the selection forces acting on ideas throughout the history of great ideas. If ideas are productive and useful then in time they will be discovered and translated into terms that permit the operationalization of those ideas. This process of translation is the key function of the Sapiential Circle and is the point at which it is possible to examine specific cases in which idea translation has taken place.

Let us first look at the case where two persons form a team and collectively act to effect a particular idea. One of the most obvious cases is that of Charles Darwin and T. H. Huxley. This is one of those stories that is basic to the study of history of science. Darwin was the sort of person I have referred to as a visionary, not in the sense of a mystic, but in the sense of an observer of data who formed a new gestalt from the material that was available to everyone. Huxley at once realized the insightfulness of the idea, and was first to come to the defense of the more introverted Darwin. Darwin was free to proceed with other studies and apply his particular gestalt-forming talents to other problems in evolution, knowing that Huxley was in a position to logically analyze the ideas and to translate them into terms digestable to other biologists. This was a form of teamwork.

In relation to the ideal Sapiential Circle, it is actually rather truncated, in that very few of the possible temperospatial points of view were represented. Over the course of history, the other points of view have examined the Darwinian ideas, and the state of evolution theory at this time represents the synergystic transformation of the original ideas as they passed through the culture. It should be clear that the original Darwinian ideas are different from current evolutionary theory. In this case the Sapiential Circle acted over great time to transform the ideas. In the ideal Sapiential Circle, much of this time would be condensed by virtue of the immediate presence of others with the necessary different temperospatial points of view.

One of the limiting factors in the transformation of ideas has been the communication distance between the individuals who can act to alter ideas at a particular stage of their development. This subconscious realization on the part of researchers led to the advent of special societies that were exclusively dedicated to the study of a particular set of ideas. An example of this is the psychoanalytic institute that centered around Sigmund Freud. As in the case of Darwin and Huxley, this group was not particularly gathered according to a master plan in which certain individuals were expected to perform certain translation tasks, but rather because they were all interested in the ideas. This is a crucial difference between an ideal Sapiential Circle and the historic gatherings that have diffused great ideas. It is my impression that the gathering of a group of individuals according to a temperospatial master plan can more efficiently deal with these translation tasks. The Freud group did represent a wide variety of points of view, and it would seem that this was a factor in their success. Further, they were close to each other, which facilitated the rapid translation of insights into practice.

An example which approximates a Sapiential Circle is that of the Macy Conferences on Cybernetics. It is a group established clearly in order to generate and diffuse a wide set of ideas across disciplinary boundaries. It met annually from 1946 to 1955 to discuss ideas common to diverse fields of study. The breadth of interests led to the formation of a new discipline which was rapidly introduced into the mainstream of the scientific world. The meetings were constructed in such a way that it was possible to have an idea translated into terms of each of the disciplines, and have immediate reactions to the particular translation by the others present at the meeting. In this way a new idea was introduced into a wide variety of disciplines in a more polished form than would be possible in a single discipline conference. I can only assume from the descriptions of the Macy conference available to me from Margaret Mead and Gregory Bateson that the conferees represented a wide spectrum of temperospatial points of view, as well as their different fields of study. In looking at the list of members at the Macy Conference, and examining their comments in terms of the Jung-Osmond typology, one is impressed with the variety of types of comments, and attitudes represented. This is the single factor which is most important in the construction of a Sapiential Circle.

That every great idea has been the product of a Sapiential Circle, is shown by the fact that the Darwinian, Freudian, and cybernatic ideas were translated and operationalized over time by teams of individuals representing divergent points of view. This is the natural course of an insightful idea. The point of my research is to identify the factors that have contributed to the natural evolution of great ideas and reproduced them in an overt, intentional plan. We have evolved our culture through the accidental encounters of individuals of differing points of view. The object of the current study is to eliminate some of the happenstance of these encounters, without suppressing the spontaneity of the interaction. In the realm of parapsychology and anthropology this approach is needed for the development of the great ideas.

Initially what is needed is a gathering across temperamental lines of individuals interested in discovering common elements in the fields of parapsychology, anthropology, physics, biochemistry, and similar related fields. To achieve these ends, there is an initial need for a conference to establish a common vocabulary for the description of the very events and mind states that are associated with the phenomenon of mind at large. Armed with an acceptable vocabulary, it would be possible to gather a conference of researchers and sensitives representing radically different perspectives on similar phenomena. After several gatherings of different sets of individuals it would be possible to arrange a meeting specifically for restructuring the basic ideas of psi and attempting to operationalize them into a form that would permit their introduction into the culture at large.

There is no magic involved in the resynthesis of novel ideas. Simply stated, there is a set of fundamental transformations through which novel ideas must pass. We are now in a position to elucidate the rules of those transformations. The result will be a quantum leap in our control of our own destiny.

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Editor's Conclusion

Within Randall's frame of reference, one wonders, can an editor act as a mutagen for a Sapiential Circle? Perhaps the Circle is what is needed to promote an appreciation for parapsychological research within anthropology--or within science in general. We will see in the next chapter how psychologist-anthropologist

Henry Reed has reorganized his own social and intellectual environment toward such an end.

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DREAM INCUBATION:
A RECONSTRUCTION OF A RITUAL IN CONTEMPORARY FORM

Henry Reed

Editor's Comments

The gradual acceptance of the reality of extrasensory perception on the part of respected scientists, combined with the plethora of ad hoc experimentation with altered states of consciousness (induced by anything from psychedelics to meditation), has led to a decline in rigorous experimentation and statistical analysis of ESP and to a rapid expansion of loosely designed but psi-conducive "personality" or "consciousness-expanding" experiments (Ornstein 1972; Tart 1975; and Teyler 1972). Since the conventional ESP tests could not have been designed better to promote a state of catatonic boredom on the part of subjects, the new experiments have, not unexpectedly, led to a wave of startling results (Panati 1974). It is difficult to see how some of these experiments relate directly to altered states as reported by anthropologists (see, e.g., Bourguignon 1973); with others, the correspondences between the two are strikingly obvious.

Such is the case with the dream incubation work being conducted by Henry Reed. Based on mythologies as diverse as those behind Ojibwa rites of passage and the Plains Indians' Sun Dance, and at the same time solidly grounded in research of the past 25 years in experimental dream psychology, dream incubation promises to offer an element of repeatability to primitive ceremonies which can no longer be directly observed. The dream incubation which Dr. Reed describes here is in some ways more a group activity, more obviously a therapeutic undertaking, and more a bizarre "trip" (largely for reasons of vastly different cultural backgrounds of the participants). But the incubation as a whole retains elements of the "peak experience." In this sense it is perhaps the nearest we can come--sensory deprivation or overload as a parallel to some shamanistic practices is a possible exception--to providing a modern replication of the primitive, or one might say more "natural," religious experience.

It is, therefore, all the more significant that dream incubation almost invariably produces paranormal phenomena. That in itself is a far cry from providing immediate insight for anthropologists regarding the mechanism whereby religious thought, mythology, and ritual evolved; but it is a step. We can at least surmise that religion and its therapeutic properties, and therefore sociocultural evolution itself, was and is strongly linked to perceptions, albeit likely misperceptions (see, e.g., Linton 1943 and Wallace 1961: 143-63), about highly personal paranormal events which occurred in the presence of key leaders.

It therefore seems paradoxical that dream incubation shares so many operational features with the Sapiential Circle which Randall discussed in the previous chapter. As to ideals the two are worlds apart. The incubation provides therapy but is only indirectly concerned with promoting cultural change. The Sapiential Circle is needed specifically to cause cultural cross-fertilization, fermentation, and, ultimately, change, but it has no intended therapeutic functions for the participants. Yet both hinge on what LeShan (1969: 72-80) has described as a relationship between the "sensory individual reality" and the "clairvoyant individual reality." LeShan and others have documented that a disproportionately large number of historic inventions, discoveries, and insights (at least those about which some personal knowledge of the inventors, etc., is known), come, by the very admission of the inventors, from flashes of insight which bear no relationship to background data (an example is the Watson-Crick formulation of DNA). Some even disclaim any knowledge of the source of their thoughts, which often have come during dreams or hypnagogic flashes. It is not too difficult to imagine how some of these cases may simply represent the inventors' minds playing tricks. But in other cases the contrast between the scientific backgrounds and the ultimate discoveries is too great to dismiss as psychological quirk (Einstein never thought of curved space while working with formulae about the speed of light, but he did "realize" the attribute while dozing in a trolley car which was going 30 miles an hour).

Hence, the differences between some of the more bizarre psychological phenomena (hypnotism, meditation, alpha-wave feedback, sensory deprivation) and peak experiences in the lives of the more productive individuals of society (the creators) becomes less real than obvious. In the same sense, the operations of the primitive shaman and the operations we view as precipitating cultural change fuse into one.

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PART I: PROCEDURE
With Preliminary Observations*

Dream incubation is the ritual of going to sleep in a sacred place in anticipation of receiving a divinely inspired dream. Incubation rituals have existed in most older cultures, and having been employed for both guidance and healing, may be one source of the therapeutic arts.

The classic example is that of the dream temples of the Greek god, Asklepios. A person with an illness--it may have been organic, psychosomatic, or strictly functional--would go to sleep in the temple, where Asklepios would appear in a visionary dream to perform a symbolic operation, and the person would awaken healed. Alternatively, Asklepios would in the dream diagnose and prescribe treatment, which the therapeutes, the designated temple attendant, would subsequently administer. Numerous testimonies exist concerning the healings and prescriptions which occurred in the dreams of those who incubated in the sanctuaries of Asklepios, and the origin of some therapeutic methods has been attributed to these incubations.

Closer to home is the practice of incubation among the various tribes of native American Indians. Their use of incubation has not been restricted to healing, and they have attributed significant cultural treasures to dream incubations. Indian dream quests have often been discussed in connection with a rite of passage into manhood. Among the Objiwa of the Great Lakes, for example, the young boy would go out into the wilderness and prepare himself a ritual nest, where he would remain, fasting, until he received the anticipated dream. In his dream, some representative of the spirit world would appear and bless the boy by revealing to him the boy's particular gifts or abilities, and would instruct him in the use of supernatural aids which might be available to the boy in the future. Having been blessed by the dream, the boy also would incur the responsibility of applying his gifts in a prescribed manner for the benefit of his community, on penalty of contracting an untreatable illness.

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The phenomenon of dream incubation raises many fascinating questions and possibilities. Hoping to observe this phenomenon and investigate its psychotherapeutic potential, I have been working to reconstruct a ritual of dream incubation in contemporary forms. In this initial paper, I will primarily describe in some detail the procedure I've developed, and briefly report some general aspects of the results observed.

This work was initially conducted as an experimental ritual in a dream laboratory. The procedure was then expanded to be consistent with healing rituals in general, and taken literally out in the field, to a summer camp. Here a tent was erected to serve, in lieu of the laboratory, as the dream sanctuary. Finally, the tent was invited to be erected in a small intentional community, where the incubation ritual found its natural setting.

The Incubation Ritual

As an initial guide in the reconstruction, I assumed that an incubation ritual is an externalization of a psychological truth--a projection mirroring a natural inner process of self-regulation, healing, or transformation. In other words, it is as if the incubant were able, by aligning himself with the symbolic structure of the ritual, to allow a certain inner condition to arise which he can not produce directly. I found as a motif common to many incubation rituals that the incubant went to sleep in a sacred place, and expected a helpful dream from a revered, divine benefactor. I therefore assumed these two focal symbols, the sacred place and the revered benefactor, to be projections of the incubant's own human potentiality. As such, these symbols are operative today in some of our feelings and expectations concerning our personal spaces or vacation retreats, if not churches and shrines, and concerning our doctors, psychotherapists, clergy, or gurus. The essence of my reconstruction is the bootstrap operation of enlisting these current symbols of sanctity and power to constellate in the contemporary dreamer approximately the same psychodynamic configuration which must have existed in the psyche of the indigenous incubant upon falling asleep in the sanctuary.

The procedure I've developed is composed of four segments: (1) the selection of the dreamer for incubation; (2) the preparation of the incubant; (3) the incubation ceremony; and (4) the incubant's testimony.

Selection. An incubation could not be sought in a temple of Asklepios, according to the proscriptions, without the person's first being advised to do so in a dream. The incubants in my work taught me the importance of such timing, and I came to use almost as stringent a selection criterion, not only to maximize the chances for the incubation of a meaningful dream, but also to protect the incubant from any feelings of failure. To introduce a strong factor of self-selection, there purposedly was no solicitation for volunteers for this experimental incubation ritual; but since many people nevertheless inquired about participation, it became necessary to provide them with a means of still further self-selection, on the basis of genuine readiness. The use of prior dreams as the basis of this selection suggested itself after I discovered that the most distinguishing characteristic of those incubants in the early stages of the work who had no dream recall the morning after the incubation ceremony was that they all had been unable to recall before the ceremony a recent dream related to the consciously stated problem. In subsequent incubations, therefore, I asked potential incubants to rely on their dreams to provide the final basis of self-selection, giving an explanation such as this:

> It's important that there exists the same readiness in the unconscious to work on the problem you've presented, as there is a genuine feeling of comfortableness about working with me and this incubation ritual. Since incubation involves the cooperation of at least your dreams, I've found that it's safest and wisest to allow them to take the initiative at this point. Spend some time thinking about your purpose for incubation, and see if your dreams concur by portraying in some form the problem you state for yourself. Should you decide that you would like to participate in the incubation ritual, bring me the dreams you remember.

Allowing the person's dreams an opportunity to respond to the prospect of incubation served well as a final source of self-selection. Many people who otherwise might have inappropriately participated in the ritual simply had no subsequent dream recall. The others returned with dreams portraying conflicts suggestive of the consciously stated problem. With a bolstered desire to experience the meaning of the suffering which now had been both consciously and unconsciously expressed, all these people subsequently incubated meaningful dreams.

Preparation. After the dreamer had decided for incubation, a date was picked, from one to three days in the future, for the incubation ceremony, and we proceeded to discuss the details of preparation. The preparation was perhaps the most important aspect of the ritual. It involved the incubant's comtemplating the purpose of the incubation, choosing the personal symbols of the sacred place and the revered benefactor, rendering these symbols and the dream upon which the decision to incubate had been based, into pictures, and finally, spending a period of time, usually the 24 hours preceding the incubation ceremony, in symbolic purification. In more detail, here is how I instructed the incubant in these matters.

I stressed the primary importance of mulling over the purpose of the incubation until as clear an image as possible was formed of the essential quest. I encouraged the incubant to devote sufficient time to activate and bring toward awareness all the feelings associated with this theme. I was especially concerned that the incubant give serious consideration to the secondary gains of his current predicament:

> As you contemplate your purpose, it is crucial that you examine all the ways in which you may be possibly benefiting from your current situation of conflict. Search hard for such paradoxical benefits, and honestly consider your readiness to let go of those that may be incompatible with your purpose. If you can humbly accept your susceptibility to these sources of resistance, but you find yourself willing to let go of their benefits, you may open yourself to other resources which may offer genuine possibilities for change.

I also encouraged the incubant to consider the sources of positive incentive for change:

> Summon all the reasons you can about the desirability of fulfilling your purpose. Savor what you wish to accomplish. Consider how accomplishing your purpose will place you in greater harmony with life and your highest ideals. How have others been missing out on you and your special gifts because of your problem and how will they be better served as you fulfill your purpose? But be sure to realistically evaluate your readiness to make use of the fruits of your incubation, so that you won't be hoping to profit by new possibilities that you can't actually implement. Perhaps the humble acceptance of your limitations may again be helpful in opening yourself to other resources.

These were issues that the incubant was to ponder during his preparation, and I would provide some hints how the person might apply these general suggestions to the particular problem being presented. For instance, to a person wanting to overcome a lack of self-confidence in creative self-expression, I would propose that the person not only review all the facts and intuitions which confirmed the value of the person's creative gifts, but also search for possible fears of letting go of perfectionistic standards, and consider the readiness to nevertheless assume the discipline and labor that all creative work requires.

I would also review with the incubant the symbolic scenario of the incubation ritual, how it might be approached as a reflection of an inner process of self-guidance or healing, and how the incubant might best enter into the spirit of the ritual. Here I guided my coaching according to the metaphors the incubant provided, and I explained about the selection of the personal symbols of the sacred place and the revered benefactor:

> Your symbol of the place of sanctity should evoke a sense of reverence along with the feelings of safety, comfort, and nurturance that this place provides. Search for such a place where you might go to think over an important problem, a place in which you feel you might be able to achieve significant perspectives on your life, a place where you would feel centered and at peace. If you could imagine, for example, coming to a realization of the meaning of your life, what would be the setting in which this blessing would most likely occur?

> Your symbol of the revered benefactor should inspire you by the feelings of confidence, enthusiasm, and optimism which this esteemed person evokes. Survey the people you have most respected and admired, people you have actually known, or only dreamed or fantasied about, and look for that trusted person who could best provide you with what you need to accomplish your purpose. Considering your own particular problem, find a person who you feel would have specially appropriate powers of healing, or a special quality of wisdom. Perhaps it would be someone loving and understanding, with a depth of perception which would enable that person to see into your heart and help you see yourself.

I advised the incubant to devote ample time to the contemplation of the chosen symbols. I requested additionally that pictures be made of these symbols, to provide an external focus of contemplation to help the incubant develop a feeling of resonance with the sources of the projected images. For similar reasons, I asked that a picture also be made of that dream, discussed previously, which concerned the topic of conflict.

Finally we discussed the significance of symbolic acts of purification, and how such aspects of ritual may provide meaningful expressions of sincerity and receptivity. If the incubant was inclined to fasting, I counseled that it be approached not with an attitude of deprivation, but rather as an affirmation that one thing could be willingly sacrificed in order to allow sustenance from something else. Rather than necessarily fasting from food, I suggested that the incubant consider fasting from an emotional attitude or habit pattern that would have to be relinquished anyway if the purpose of the incubation were fulfilled. I stressed that an effective fast need not be a perfect one, for if the incubant learned from the difficulties of the fast how ubiquitous and unyielding to sacrifice the fasted-from emotional pattern could be, the resultant humility might create more receptivity to the grace of the incubation. I also prompted the incubant to give special thought to the details of the physical preparation for the ceremony, such as bathing, grooming, and clothing. These were all personal matters left to the discretion of the incubant. I did request, however, that the incubant arrange the environment of the dream tent in a personally pleasing manner, and place his pictures within the tent, in order to transform that space into the incubant's own symbolic sanctuary.

Instructing the dreamer in the details of the preparation typically required about an hour. I would then have little contact with the incubant until the evening of the ceremony. The day of the ceremony the incubant set aside as a quiet day of introspection.

The Incubation Ceremony. In the early evening, the incubant and I met in the dream tent, spending a few minutes in silence together before beginning. To begin, I asked the incubant to explain his purpose. I would simply listen to the ensuing story, asking an occasional question to clear the way for the expression of more subtle levels of meaning. I specifically asked about the sources of incentives and inhibitions to achieving the purpose of the incubation, and we would discuss the incubant's preparation for dealing with these matters, as well as with the possibility that the incubant might not remember his dreams. I would often counsel the incubant about the danger of expecting any particular dream experience. This initial period of the ceremony (lasting from two to four hours) functioned as an opportunity for cathartic confession, prompting the activation prior to sleep of many of the ideas and feelings associated with the incubant's purpose.

I then asked the incubant to tell me the dream that had been brought to the ceremony, while we looked at the picture that the incubant had made of this dream. As we began to work with the dream, I engaged in no dream interpretation, but rather coached the incubant to provide the meaning, while we alternated between empathic role-playing dialogues and analytic discussion.

I would ask the incubant initially to tell me the possible meanings of the dream, to provide a basis for later comparison. I then encouraged the incubant to play the role of each and every character of element in the dream (as in the dream work of Perls' gestalt therapy), while I diplomatically interviewed each one to elicit the expression of its own feelings and ideas as the entire dream was repeated from that particular point of view. Then when the incubant and I discussed again the possible meanings of the dream, the incubant commonly would emerge with an expression of a more deeply felt meaning for the dream than was initially conveyed. Additionally, the incubant usually expressed some insight about the relationship between the dream and the consciously expressed problem, often viewing the problem from a fresh perspective.

The incubant would next resume role-playing the characters in the dream, this time engaging in switch-back dialogue between the conflicting elements, while I acted as mediator, until some constructive resolution was achieved. By entering the dream empathically and attempting to establish harmony, the incubant would experience how his variously conflicting motives, notions, habits and values resisted yielding to compromise. The struggle to carry the dream forward into harmony served as an affirmation of the incubant's willingness nevertheless to explore new patterns. A key assumption underlying this part of the ceremony is that the incubant's symptoms respond sympathetically to the constructive efforts applied in the domain of the dream symbols.

I then asked the incubant to assume the role of the person chosen as the symbol of the revered benefactor, using the picture made of the benefactor as a point of focus, or as a mask. I would interview this person, eliciting enthusiastic expressions of the benefactor's self-confidence in such areas as healing power and wisdom. When I asked the benefactor to speak about the incubant's predicament, the benefactor would often speak with remarkable compassion and authority, offering surprising insights and suggestions. I then prompted the incubant to comment on the benefactor's remarks, and a fruitful dialogue frequently ensued. The incubant would be encouraged by the discovery of such a helpful resource.

Finally I asked the incubant to describe the setting chosen as the personal symbol of the sacred place, while we looked at its picture. The incubant would assume the role of the sacred place, giving expression to those feelings that this symbol evoked.

The incubation ceremony at this point would have lasted from four to six hours. There had been a progression of emotional themes, from the frustration, sadness and longing of the period of confession, through the conflictual turmoil and its resolution in the dream enactment, and finally to the optimism and serenity evoked by the personal symbols. I would inform the incubant that our work was essentially finished, and we would take a needed break while the incubant prepared for bed.

We concluded the ceremony with a pre-sleep reverie. While the incubant lay on his back, I began coaching him in relaxation (based on a modification of Schultz's autogenic training), giving instructions in experiencing heaviness and warmth in the limbs, and in experiencing the breath as transpiring of its own accord and without personal effort. I included symbolic meanings with the instructions, and provided a symbolic context for the reverie, to place this practice in meaningful relation to the incubation process. "Letting go, trusting in inspiration," was the essential theme. I assured the incubant that he had worked hard on his problem, that he could now relax, temporarily releasing his problem to the unconscious, and that just as he could trust his breath, so could he trust to be inspired. Here is a partial rendition, giving the general sense of the instructional incantation:

> Hold your arm up slightly from the ground ... experience the effort required to resist the pull of gravity ... gradually yield to gravity, allowing your arm to sink slowly back to earth ... experience the pleasure of letting go, of giving in to gravity, of letting the earth support you ... you have done all you can to work on your problem, and you are now entitled to relax ... you relax as you allow yourself to experience your arms and legs as heavy ... experience the pleasure of the sensation of heaviness as you let go of your problems and let the earth support you ... as you focus on the experience of warmth in your arms and leg you feel at peace ... focus gently, gently on your breathing, following it in and out ... as you exhale, let the breath go, and release yourself from the control of your breathing ... give in to expiration with a peaceful sigh of relief, and then allow your next breath to come to you on its own ... trust in your breath, and as you inhale, think, 'it breathes me' ... let go of your breath and trust in inspiration....

I then suggested that the incubant imagine being in the chosen place of sanctity, with the revered benefactor. The structure of meanings in the relaxation procedure and this suggested symbolic motif of the incubation process are mutually supportive:

> Imagine that you are in your sacred place. Allow the special protective and comforting atmosphere of your place of healing to create within you a mood of serenity.... Your arms and legs are heavy and warm, you have let go of your problems, yielding yourself to the support of the earth, giving in to your

> expirations with peaceful sighs of relief, as you are safe within your sacred place of healing.... Imagine that your revered benefactor is approaching. Feel the special vibrations of your benefactor's presence, and experience the confidence and optimism that is inspired in you ... letting go with a peaceful sigh, trusting in inspiration.

This final combination of images, contemplated within the context of all the preceding preparation, is assumed to constellate the receptivity appropriate for incubating a helpful and meaningful dream. To help the incubant maintain this receptivity upon falling asleep, I would then terminate the ceremony with a sleep-inducing reverie accompanied by music. I encouraged the incubant to now relinquish control of even the stream of his consciousness, and while not trying to produce any particular result, fall asleep ready and willing for whatever might be given.

> You are in the presence of your revered benefactor, safe within your sacred place, and have relinquished all further attempts to deal with your problem yourself. Give yourself over to anything that you might now experience, and assume that whatever you do experience is part of the healing that is beginning to transpire as you fall asleep. As the music plays, report to me whatever you experience, whether it be bodily sensations, thoughts, feelings, or images. Let go of control over what happens from this point on. Let go, and trust in inspiration.

I then turned on a cassette recording presenting a series of selections of classical music designed to be played while in a reverie to enhance the emotional component of the reverie experience. This particular program, "Positive Affect" (produced by Helen Bonny, of the Institute of Consciousness and Music) has a sequence of emotional themes quite consistent with the symbolic situation being imaginatively assumed by the incubant. As the music played, I would simply coach the incubant to relay his experiences ("tell me what's happening now"), and as the incubant provided intermittent reports, I would reply with simple affirmative or supportive remarks ("fine," "go on," and such).

This final pre-sleep reverie is not intended to be an induced dream or guided fantasy, nor was it an attempt to employ suggestion to program a particular dream experience.

These alternatives may be workable approaches to inducing potent dreams, but are contrary to the spirit of this particular dream incubation ritual, whose theme progresses from preparation, through hard work, to surrender. The suggested imagery is not intended as a thematic starting point for a dream, but rather its purpose is to coalesce the incubant's preceding activity into a particular state of being upon falling asleep--an attitude of surrender, trusting to subsequent autonomous processes--and to provide an opportunity for the dreamlike processing and discharging of surface material related to the incubant's work in order to free the subsequent sleep and dream activity to deal with deeper levels of significance.

The music lasted for about 40 minutes, and by the time it finished, the incubant's reports would have become almost inaudible. I would then quietly leave the tent, while the incubant had typically already fallen asleep.

Testimony. The morning after the ceremony, I returned to the dream tent and listened to the incubant relate the dreams from that night. I would ask to hear the dreams at least twice, and then I asked about their possible meanings. In a manner similar to that employed the night before, I would coach the incubant in assuming the role of each dream element, and afterwards we would discuss again the possible meanings of the dreams and their relationship to the purpose of the incubation.

I cautioned the incubant not to rest content with any particular interpretation, but to tentatively apply into practice a hypothesized interpretation, and allow the meaning of the dream to develop over time. I also expressed my belief that the ultimate value of the dream might not in fact lie in its interpretation, but more in its direct experiential impact upon the dreamer. I would therefore prescribe that the incubant mentally rehearse the dream frequently to cultivate a resonance with its images. I specifically requested the incubant to make a picture of the dream to serve as a reminder and a focus of contemplation.

The incubant would then prepare a written testimony of the experience of the incubation ritual, beginning the account with our first contact. The testimony included a record of all the dreams recalled, from this first contact up until the time that the written testimony was completed. The testimony also included a description of the purpose of the incubation, the work that went into the preparation, and as detailed an account as possible of what transpired during the incubation ceremony.

The incubant was required to make a present for me. The presentation of this symbolic gift forgave the incubant of any obligation to me, appeased any desire of mine for recognition or compensation, and brought our ritual relationship as incubant and therapeutes to a close.

Some Preliminary Observations

In this initial paper, I will attempt only to briefly describe some general patterns of results that have been so far observed. A more comprehensive presentation will be possible only in the context of a necessary theoretical analysis of the function of dreams and the process of dream incubation, and after enough time has elapsed to allow long-term, follow-up testimonies to be obtained from all the incubants. The observations I will present now, however, may be sufficient to suggest the viability of the dream incubation ritual.

As in my work with dreams in other contexts, I have found the value of the dreams obtained in the incubation ritual to come from a mixture of the experience of the dream itself and the meanings, or elaborations, given to the dream. I'll provide three examples of dream incubations to illustrate how these two complementary processes have operated to help fulfill the incubant's purpose.

In many incubations, the incubated dream provided an intense emotional catharsis. For example, one incubant was frustrated by a work inhibition which was related to extreme self-criticism. The incubant had a prior dream which graphically portrayed the volcanic intensity of his creative energy, but which also portrayed his father as inhibiting the dreamer with his cynicism about the dreamer's efforts to make use of this creativity. In his incubated dream, he had cathartic exchanges with several important people from his past, including especially his father, from whom he received in the dream the kind of positive emotional support which he claimed had been painfully absent in their relationship. The incubant awoke from the dream crying, but relieved and renewed, feeling a fresh capacity for work. Reliving the emotional exchanges in the dream at various times later encouraged him and supported his work efforts. He also had some subsequent meaningful dialogues with his father, made possible, he felt, because the dream had relieved him from continuing his inappropriate emotional demands upon his father.

In some incubations, the dreams were of value in providing other forms of compensatory experience. For example, one young boy, concerned with his involvement in psychedelic drugs, brought to the incubation ceremony an epic seafaring dream portraying the plight of some pitifully adrift, water-logged creatures who longed desperately for dry land. The young incubant empathized with these creatures, and recognized in their desire for dry land his own longing for a sure-footed alternative to his psychedelic voyages. Yet he resented the pressures of socialization he encountered in the "straight" environment of home and school. His incubated dream gave him the needed experience of navigating satisfactorily on dry land: He was walking down a hot dry road, the dust choking him, when he came to a dead end. He climbed up a tree to survey the surrounding forest, and spotted an axe a short distance away. He climbed down, picked up the axe, and began making his own trail through the forest. In contrast to the dry dusty road, the path he cut for himself was cool and refreshing. Encouraged by this image of blazing his own trail, when he returned to school he successfully initiated his own study projects. His use of drugs declined significantly, and his subsequent dreams provided him with additional images of special implements, such as a jewel-studded sword, which he could add to the resources needed to pursue his individual path.

Sometimes the value of the incubated dream has been primarily in providing just such inspiring symbols. For example, a young woman with asthma wished to improve her overly restricting relationship with her mother, a situation which she felt contributed to her asthmatic condition. The dream she brought to the ceremony portrayed a little girl held captive within a suffocating house belonging to an old woman who had recently died. When she enacted this dream, engaging in dialogue between the little girl and the house, she not only experienced the guilt feelings aroused by her inclination to leave her mother, but she also contacted her feelings of self-doubt about being independent, feelings echoed by her mother. In her incubated dream, an inspiring elderly lady presented her with a fantastically beautiful dress, and sent her away on an important mission. The incubant did sew dresses, and dresses were frequent dream images, but were usually either too sexy and revealing for her taste, or were shabby or overly modest. She said that the dress presented to her in her dream was perfect beyond her imagination. I encouraged her to paint a picture of this dress, and perhaps to sew a facsimile. Sometime later I encountered her, working away from home, and she said she was taking much less medication for her asthma. She showed me some beautiful paintings of her dream dress. She was hesitant to actually sew the dress just yet, but she described to me instances in which she would have previously been lacking in self-confidence, but that now she handled easily, simply by imagining that she was wearing her dream dress and acting accordingly.

There have been incubations more ambiguous than the three examples given, as well as some more dramatic. In addition to their incubated dreams, certain incubants experienced something during the night which had the quality of a vision. In contrast to their incubated dreams, the content of these experiences did not seem to fit in with the themes being worked with, and were not the typical dreamlike dramas set in distant locales. Instead, the setting of the vision was within the tent itself, where the incubant was visited by a strange presence. The vision would end when the incubant awakened, leaving the person confused whether the event really happened or was a dream. In one instance, an incubant experienced a beam of light emanating from the presence of someone standing outside the tent, and this light passed through the incubant's body, seemingly near his heart. In another instance, an incubant awoke hearing a voice say, "roll over onto your right side and I will give you your number." When the incubant rolled over, the voice spoke the number. The incubant reported that he accepted the number, then fell back asleep, and had a dream in which he took his number to a special friend for interpretation. Although these vision-like experiences were quite reminiscent of the written accounts of the dream visions experienced by indigenous incubants of other cultures, I was tempted for awhile to discount them as being more the result of suggestibility and overanxiousness about having a dream. I wish I had given them more careful note, because one incubation finally convinced me of the importance of these experiences, and led me to suspend conducting further incubations until I had ample opportunity to evaluate the implications of such experience for the pursuit of this research.

This particular incubation was conducted with a very intelligent and creative young woman, and was distinguished by the responsiveness of her dreams to the prospect of incubation. During the period of preparation, she had dreams in which her personal symbols were portrayed for her, and in which she received guidance in other aspects of her preparation. The morning after the incubation ceremony she reported to me some meaningful dreams which have since seemed to fulfill the purpose of her incubation. But then she hesitatingly revealed that something else had happened that night as well: She awoke, startled to find that a strong wind was blowing, and that the tent had blown away. A small, old woman appeared, calling out the incubant's name, and commanded her to awaken and pay attention to what was about to happen. The woman said that she was preparing the incubant's body for death, and that the winds were spirits which would pass through her body to check the seven glands. The incubant was at first afraid, then took comfort in the old woman's aura of competence and authority, and finally yielded her body to the experience, almost pleased with the prospect of death. During this time, the incubant saw before her a large luminous tablet, containing many columns of fine print, detailing her experiences in her past and future lives. The vision ended abruptly, and the incubant found herself lying within the tent, as if she had awakened from a dream.

But unlike the dreams she had had that night, we were unable to provide this vision with any meaning through the usual role-playing methods. She said that this experience was qualitatively different from any of her other dreams or psychedelic experiences. Whatever it might mean, she said it effectively revealed to her how her existence was not dependent upon her physical body. In her most recent letter, written several months after her incubation, she reported that her dreams were just beginning to deal with the contents of this vision, after having finally terminated a long series of commentaries on the dreams she had incubated concerning her initial problem.

It is in this last respect that this particular incubation, as profound as it may prove to be, has been similar to the results of the others: Whatever potential benefits were provided by the incubated dream, they seemed to require patient cultivation before they began to manifest in actuality. The incubants have typically presented stories of gradual change, in which participation in the incubation ritual is given a timely and meaningful role, but certainly not an exclusive nor necessarily causal one. Most significantly, the incubants have frequently reported a subtle yet quite encouraging change in their relationship to their dreams. Their dreams appear more responsive, and there is a greater feeling of dialogue and cooperation, as subsequent dreams have guided the endeavor to apply the fruits of the incubated dream. As one incubant phrased it, the incubation "gave me a unique touch with myself."

The incubation ritual was designed to reflect back to the incubant his inner resources, and to help the incubant become more self-sufficient in his growth. As I played the role of the therapeutes in this experimental ritual, the difference between the positive sense of surrender and the negative sense of submission has been a delicate issue for me. It was my intention that the structure of the ritual would allow the incubant to genuinely internalize the placebo factor which I doubtlessly contributed. I have been especially pleased, therefore, that the incubants have tended not to pay me particular tribute, but rather have directed their reverence to the incubation process itself and to its source, the healing power of the psyche we share.

The phenomenon of dream incubation, as I said at the beginning of this chapter, raises many fascinating questions and possibilities. I believe that the contemporary incubation ritual I've described permits the phenomenon to reveal itself, and should prove to be a fruitful paradigm for further research. Pursuing this phenomenon in the manner I have has been an adventure for me of personal significance and has transformed my approach to psychological research. Given the proper setting, I would now like systematically and intensively to study the applicability of dream incubation toward two areas of concern. First, from my personal experience, I believe that the problem of alcoholism and addiction would be particularly susceptible to the reorienting effects of dream incubation, especially among our youth. Secondly, on the basis of certain observations surrounding the use of the dream tent in an intentional community, I believe that the dream incubation ritual has the potential of providing contemporary communities a means of evolving their own unifying symbolic culture of myths, rituals, songs and dances. I believe that in such an application lies a unique opportunity for exploring the parapsychological and transpersonal phenomena so often attributed to dreams.

PART II: SUNDANCE: INSPIRATIONAL DREAMING IN COMMUNITY

More than any other human experience, it has been dreams which have led people to speculate about precognition, clairvoyance, and telepathy. And so it has been with my own experience researching dream incubation. Although initially I was primarily concerned with how people might help themselves with constructive dreaming, the dreams themselves coaxed me into an investigation of some apparently parapsychological phenomena. Here I shall report on the beginnings of an attempt to study one of these--clairvoyant or telepathic dreaming in response to a call for help.

Gathering Sparks from the Research Dance

The Incubation Ceremony [see paragraph heading p. 164 above] and the resulting dreams [see major heading "Some Preliminary Observations," above] depicts a group of people gathered for a common purpose, "the enlightenment" (i.e., the incubant's dream), and a research paradigm involving a pair of interdependent goals requiring the collective and individual components to be simultaneously fulfilled. Those participating in the incubation ritual then create a ritualized dance to cause the desired effect. We call this the Research Dance because, in addition to satisfying the incubants' need for mutual love and recognition, it also generates sparks of illuminative research data.

The "Dream" which evolved in and emerged from the incubation ceremony is the totality of the orchestrated and ritualized dream experience and research paradigm which has come to be the guiding influence in developing a community approach to the experiments which have followed. I have tried to realize the truth in this Dream through the choreography of experimental community ceremonies where the emphasis in experimental design has necessarily shifted from the decisiveness of the resulting data to the quality of the subjective experience of participation. The Dream has correctly predicted not only that this approach would be personally satisfying, and would generate interesting research possibilities, but also that the resulting data would be both provocative and elusive.

A frequent context for my research has been the communal education experiment of Atlantic University, an affiliate of the Association for Research and Enlightenment, an organization centered in Virginia Beach, Virginia, and founded upon the work of the late psychic, Edgar Cayce. In an Atlantic University session, a group of approximately twenty strangers would come to live, work, and study together for six weeks, in an attempt to verify and apply principles, derived from Cayce's work and contemporary psychology, concerning individual and communal harmony and growth. The daily schedule for the community usually included three periods of meditation, a period of dream sharing, a period of group encounter, and one of seminar discussion. It was the intention that interpersonal relations and group dynamics would interact with, and intensify, each person's progress in achieving his or her personal growth goals. Thus, although I designed and introduced the dream incubation tent for an individual and private healing ritual, I soon realized that the community had an interest in the success of the person incubating a dream in the tent. As dream incubation became a significant event in the life of the community, and the incubants became natural targets for other people's dreams, I began to encounter dreams that suggested parapsychological interactions.

On the night a person was sleeping in the tent to incubate a dream, frequently other members of the community would spontaneously have a dream pertaining to that incubant. Some of these peripheral dreams would appear to be a reflection of the dreamer's identification with the incubant. Other dreams would contain material which was indeed informative or helpful, as if such a dream were a commentary on the incubant's problem. These dreams appeared to reflect a fortunate combination of projective identification and intuitive empathy on the part of the community member toward the incubant. However I might regard these peripheral dreams as natural extensions of the supportive group atmosphere, involving normal, although extraordinarily intuitive, processes of interpersonal perception, there would remain certain aspects in some of the dreams beckoning, in addition, a parapsychological perspective. Sometimes a dream would portray in such explicit detail a facet of the incubant's situation, apparently unrelated to the dreamer's own life, and concerning something that the incubant had shared with no one, that a telepathic or clairvoyant interpretation seemed reasonable.

I would share and discuss these incidents with the community, and would encourage people to be on the lookout for such dreams. We were able to make constructive use of the dreams for increasing the sense of interdependence in growth between individual community members, and for giving tangible evidence of an underlying communal unity. As pleased as I was to observe such happenings, I was uncertain about how to render these events serviceable to parapsychological research. Attempts at systematic documentation, for example, seemed to exceed people's patience. Instead, the events were rapidly assimilated into the community's ongoing process. The problem remained of how to gather the sparks for a more enduring light without at the same time destroying the dance that generated them.

An Experimental Dream Helper Ceremony

Recently I had the good fortune and pleasure of having Professor Robert Van de Castle join me in some community dream research. His background, not only in dream telepathy experiments, but also with Central American Indian dream ceremonies, proved particularly helpful. Van de Castle also had prior experience with Atlantic University and A. R. E. retreats, and had observed himself that the community atmosphere at such retreats favored rich parapsychological interactions among the participants. He also found that it was nevertheless relatively unproductive to attempt to test the situation by means of typical experimental methods, such as by having participants try to dream about target pictures.

The frequent spontaneous phenomena I had previously observed--apparent clairvoyant/telepathic dreams which were helpful to another person--seemed to us a fruitful topic for study. But rather than bringing a testing attitude, we felt that we should be more affirmative in our approach. We agreed to the advisability of devising an experimental situation that focussed the participants' attention on being sensitive and helpful to one another, without introducing an element of self-concern about scoring parapsychological "hits." Our main question was whether such helpful dreaming that had previously only occurred spontaneously could now be intentionally produced in the context of an experiment. And thus we created an experimental dream helper ceremony.

The particular occasion was a six-day dream study retreat sponsored by the A. R. E. In comparison with an Atlantic University community session, this retreat was quite brief and less intensive, but was comparable in purpose and orientation.

The Dream Helper Ceremony. On the fourth evening, Van de Castle and I presented to the group the idea for the experiment. Van de Castle began by sharing the personal story behind his involvement in dream telepathy research. He told many amusing anecdotes to illustrate the important message that those frequently embarrassing details in a dream, seeming initially irrelevant, often turn out to contain the biggest payoff. I related stories of people having dreams containing needed information helpful to another person, comparing this activity to the service Cayce performed in his trance. We then proposed that with people's approval and cooperation, a dream ritual be performed for any individuals present who had a pressing personal problem back home for which they were willing to solicit help from the other participants. The proposal was met with considerable enthusiasm, and the ceremony continued.

Four people stepped forward as supplicants, asserting only that they had a problem; but without stating the nature of the problem, requested our aid. The rest of us, including Van de Castle and myself, then gathered around that individual supplicant to whom we felt inclined to donate that night's dreams as help. It had been requested that the dream helpers not choose a supplicant whom they had come to know personally, nor with whom they had shared a dream discussion group. Otherwise, the dream helpers were encouraged to allow inner promptings to guide them in the choosing of their supplicant.

Each supplicant then led his or her band of about ten helpers off to a secluded spot to perform a ritual for incubating dream assistance. Basic instructions had been provided, but with allowance for variation by the individual supplicant. The helpers first gathered around the supplicant for a period of meditation. Then each helper in turn held hands with the supplicant, who meanwhile concentrated on the nature of the problem. Afterwards, the supplicant presented to that helper a personal, meaningful object (Bible, charm, wallet, jewelry, picture, etc.) for the helper to sleep with that night. After each helper had joined with the supplicant, there was a final meditation, and then the people dispersed for bed.

I think it is significant to mention that by bedtime there was a definite air of expectancy among the participants, such that Van de Castle and I noted between us the confidence we sensed, and we predicted a successful night of dreaming.

The ceremony was resumed the following morning, as each supplicant assembled with his or her group of helpers for the sharing of dreams. The only instruction given was that the helpers were to completely give away their dreams. The supplicants were encouraged to comment and reply, but were told that they need not reveal the nature of the problem unless they so chose.

Dreams for Mary. Here is an account of the helping group I was in, dreaming for a 21-year-old woman, whom I'll call Mary.

Three helpers recalled no dreams; the other six reported theirs. One dreamed of going to a supermarket. Another dreamed of going to a drugstore to purchase a "pocket shower kit," but encountered difficulty paying for it. This helper also dreamed of going to a library. Another dreamed of a "Jewish mother" who never believed her child was well. One helper dreamed of holding hands in communion with Mary, of going to a piano recital, and of a boy diving very deep into a pool of clear water. Another dreamed of being under water, emerging to fly over our retreat, where she saw Mary, and heard a doctor's voice declare, "her diet is too tight--water is very important." This helper also dreamed of being at a fashionable poolside party.

I can report my own dreams in more detail. First, I dreamed that I was lying on the deck of a sinking ship. The water level was rising slowly, but was beginning to enter my mouth. I began to choke, and woke up abruptly, with the inexplicable impression that Mary had been ill and almost died. Second, I dreamed I was in my childhood home, and I heard "Mom" playing on the piano. I also saw her in the bathroom taking a shower. Then I saw her standing in the kitchen, dripping from the shower, talking on the telephone to someone about how her piano playing was always interrupted. I also saw "Dad" lounging in the living room in his pajamas. I say "Mom" and "Dad" because they didn't look like my parents at all. Then I went outside to return a book to the library. Outside on the lawn was my personal library, and it was being soaked by a lawn sprinkler.

We tried to piece our dreams together to form a pattern that might suggest the nature of Mary's problem. Certain images had been repeated: shopping, library, mother, and piano. But especially was the image of water repeated, often in conjunction with a health theme. We speculated that Mary's problem concerned health, for which water might be a critical factor.

Mary was obviously stirred, and responded excitedly, saying something to the effect that we were wrong about the problem, but otherwise more right than we knew. She explained that the problem that she had sought help for concerned her recently canceled wedding. None of our dreams reflected a marriage theme, but two did touch on matters which were involved in the breakup. Mary recognized the dream of the poolside party as the type of social function she frequently had to attend with her ex-fiancé and his family. She and he came from disparate social backgrounds, and this difference created problems for them. She said that the dream of the Jewish mother also reminded her of her ex-fiancé, for he had once been very ill, but his mother continued to treat him like a sick little boy. Beyond these two correspondences, she saw little in the dreams pertaining to her question about the canceled wedding. Mary said that what so impressed her was to find so much in the dreams that was nevertheless directly related to many other problems that confronted her.

To the water imagery and health theme in the dreams, Mary responded strongly with an account of her medical history, a story she had not previously shared with anyone because of embarrassment. Mary had a chronic, epileptic-like condition, with seizure-like episodes brought on by tension. She said the themes of being underwater reminded her of how she would feel "flooded" prior to a seizure, an image she had been concerned with during the retreat. She said that my drowning dream was a good image of what had happened to her during a recent stay in the hospital. As an unexpected side effect to some medication she received for her condition, she developed a temporary partial paralysis in her sleep. As a result, while sleeping on her back, her saliva was not swallowed, but instead filled her throat, choking her, and she almost died from suffocation. My dream of going down with the ship seemed to me to be just the sort of nightmare of helplessness that might be provoked by an event in sleep such as Mary's. The resemblance startled me, because there was an unusual quality to my dream, and considering my impression upon awakening, I couldn't help but feel that

I had somehow experienced Mary's hospital trauma. Be that as it may, I couldn't see how my dream could be of any help to Mary.

There was perhaps more help to be found in that other underwater dream, in which the dreamer emerged to fly over the retreat, see Mary, and hear a doctor comment on Mary's condition. Mary explained that her doctors had not yet diagnosed her condition to their satisfaction, and various treatment programs had been attempted. As a method of treatment, diet had not been explored. The phrase, "diet too tight, water important" reminded Mary of a related component of her medical condition--fluid retention-- and she wondered if perhaps diet might indeed be a potential mode of therapy. Since Mary was anxious to reduce medication, perhaps this dream contained a needed clue for her treatment.

There were other areas of correspondence. Mary said that the image of a library had recently been on her mind. It related to her ambivalence about going back to school, because her parents would have to bear the expense. She frequently wondered why she couldn't learn what she really needed by reading in a library. It was interesting that my personal library, the one being watered in my dream, was actually borne out of just the sort of fantasy Mary had been entertaining.

Concerning the piano theme, Mary said that everyone in her family was musical except for her. She frequently went to piano recitals with her family. Her mother played the piano, but found the responsibilities of the home disruptive of her practice.

Perhaps these correspondences are more than coincidental. But what purpose was being served by them? The purpose of the ceremony was to be helpful, not merely to spot isolated facts. It was not until I began the process of giving away not just my dream, but also my personal feelings about my dream, that a more helpful pattern in the dreams emerged.

I'm referring to that dream of being back in my childhood home observing my parents. Going over the dream with Mary, we discovered that although our home situations had some commonalities, the dream depicted her home more than mine. Both our mothers played the piano, and both complained about their playing being so often interrupted. The physical description I gave of the mother in the dream was unlike my own, but fit Mary's mother very well. In my home there was only one phone, in a vestibule; but in Mary's home there were several, of which her mother used only the one in the kitchen. Whereas I recall my mother using the telephone but rarely, Mary said her mother was frequently in the kitchen talking on the telephone. Similarly, the description I gave of the father in the dream was unlike my own, but fit Mary's father well. The resemblance included his habit of lounging in the living room in his pajamas, something I don't recall my own father ever doing.

This dream thus had the curious quality of being a literal representation of an aspect of Mary's home, but also portraying an emotional situation we both could recognize. If the literal details of the dream applied to Mary, I wondered if the emotional significance that might be revealed in the meaning of the dream might also be relevant to her. I therefore began to work on the dream relative to myself, to see if Mary would respond to any of my self analysis.

The most salient aspect of the dream for me was seeing mother in the shower. This dream image recalled to mind an old childhood memory of walking in on my mother while she was taking a bath. I recall her getting terribly upset, complaining about her lack of privacy, and making me feel very guilty about invading her life. This memory seemed to have a strong emotional connection with memories surrounding my mother's piano playing. Listening to her play gave me that oceanic feeling of bliss. If she were to be interrupted, and get very upset, I would somehow feel guilty, as if I were the source of her frustrations, similar to when I interrupted her bath. From time spent in psychoanalysis, I could recognize how such memories had been incorporated into my particular mother complex. One aspect was an unresolved dependency, both disguised and fed by guilt feelings about being the cause of mother's unhappiness. It has been with the task of "watering my books," developing healthy, reliable feeling ability to rejuvenate outmoded thinking patterns, that I have been forced to resolve this dependency.

Mary responded very intently to my self-analysis. She explained that her mother's frustrations were a frequent source of friction in the home. Mary realized that she too, like me, assumed that she was somehow to blame for her mother's unhappiness, and the discord between her parents.

Mary also now realized how her guilt feelings paradoxically inhibited any tendency to leave home and begin a life of her own, thereby prolonging her dependency. Mary indicated that recognizing her guilt feelings, her emotional dependency, and their relationship, was a new realization for her.

Three other dream helpers supported this analysis by finding similar guilt and dependency themes reflected in their dreams. In particular, the helper who dreamed of having difficulty paying for the pocket shower kit at the drugstore discovered that the theme of "paying for what you get" was exactly how she had to deal with her own difficulty in outgrowing her dependency on mother. Mary responded to this analysis as well, indicating that the library theme, which this helper had also dreamed about, represented the same type of problem for her, as she had not been able to face up to the responsibility of paying for her own education.

Our helping group was becoming something like a group therapy session. The emotional sharing revealed even more how the dreams were both relevant to Mary's situation and to unresolved aspects of the dreamers' own lives as well. What emerged from the discussion was a definite pattern, reflected in the collection of dreams, revealing a hypothesis that Mary found very meaningful. Besides the possibility that diet might be a contributory factor in her medical situation, there was also the suggestion that there might be a psychosomatic component as well. Her feeling image of being flooded, prior to a seizure, echoed her style of dealing with emotional tensions, especially conflicts associated with guilt. Fantasies of guilt concerning her mother perhaps served to help Mary avoid assuming the responsibility for resolving her need for dependence upon her mother. Mary's ex-fiancé appeared to have a similar dependency conflict, a commonality with Mary which seemed to have played a strong role in the breaking off of their engagement.

Community feedback. When the community was reassembled to discuss the ceremony, it was learned that the other three helping groups had an experience as provocative as that we shared with Mary. The supplicants reported that the dreams contained surprising pieces of revealing and meaningful information. Two of the helping groups had been able to correctly identify the focal problem from the dreams. Generally, the dreams taken as a whole were more indicative than any particular dream by itself. All found the dreams to go beyond the scope of the problem as initially conceived, but to place the problem in better perspective. The supplicants expressed surprise, and some embarrassment, that the dreams could penetrate so deeply into their lives. They also expressed gratitude for having had a definitely beneficial experience.

The dream helpers also found the ceremony to be personally rewarding. The sharing of dreams in this manner created greater openness and closeness among the people than the typical dream sharing groups. Many found that their dreams were personally relevant as well as helpful to the supplicant. Such overlap contributed to the valued feelings of identification between helper and supplicant. It also aroused some ambivalence, feelings of being both tantalized and threatened by the apparent reduction of ego boundaries between individuals.

The ceremony obviously had strongly aroused the participants, and had created intense personal involvements. There was an apparent need for continued discussion. As if some debriefing experience were required following an unbelievable event, discussion tended in the direction of grappling with issues concerning possible artifacts in the experimental results.

There was speculation that since we all share basic dimensions of psychological commonality, perhaps any dream chosen at random would prove as helpful to the supplicant as had the dreams of the designated helpers. A poll was taken concerning common themes appearing in the dreams. Whereas in Mary's group, six out of the nine dreams reported had a water theme, in the other three groups, only one dream with water appeared. In another group, all of the dreams had a black/white polarity theme, correctly pinpointing their supplicant's question concerning a biracial romance. But in no dream in any other groups did such a polarity theme emerge. It did appear that the collection of dreams for an individual supplicant had some degree of specificity.

There was also speculation that some of the commonality experienced between the helpers and the supplicant resulted from allowing the helpers to choose which supplicant to help. Many helpers expressed a feeling of being "drawn" to a particular supplicant, of having their desire to help activated more by one supplicant than by the others. People evidenced strong feelings that being allowed to choose the person they would help was an important aspect of the ceremony, and that they would have felt less involved and committed had they been arbitrarily assigned a supplicant. These observations nevertheless aroused the participants' curiosity about the role intuitive empathy may have played in the ceremony.

There was related speculation that some of the correspondences were not so much discovered in the dreams, but rather created in the discussion of the dreams. In many instances, the relevance of a dream was not evident until the dreamer provided personal associations. Similarly, the willingness of the supplicants to reveal their problem and to discuss possibly related issues as prompted by the dreams also contributed to the number of correspondences observed. The participants were sensitive to the issues being raised, but were also unanimous in their insistence that the dream discussion and sharing with the supplicant was an indispensable part of the ceremony.

The participants then began an attempt to design an alternate procedure for a dream helper ceremony. It was proposed that, after the dream helpers had chosen their supplicant, they write down any intuitions they might have about the supplicant's problem. The next morning they would write their dreams, personal associations, and whatever help for the supplicant they could surmise from this material. Then the entire collection of both the intuitions and the dream material could be rated for accuracy and helpfulnesss by each of the supplicants. Afterwards, the supplicants would meet for dream discussion with their helpers, and perhaps also with those people whose written material the supplicant had rated most highly. It was suggested that such procedures might allow a determination of the relative efficacy of the intuitions and the dream material, and of the supplicant's designated helpers and other people, and might allow for a determination of the contributory role of the dream discussion procedure.

These and related proposals met with mixed reactions among the participants. There was some concern that the paperwork might depersonalize the experience, unless it could somehow be transformed into a meaningful and engaging process of helping the supplicant. From the supplicants came the significant observation that some of the help they received involved their opening themselves to somewhat painful insights, a process requiring the support of interested helpers. If the supplicants were to rate written material, there would be a tendency to approve only that information which was consistent with their conscious orientation. There seemed to be no valid way to avoid the creative component in discovering the helpfulness contained in the dreams.

The discussion concluded on a note of reminder that discerning the nature of the correspondences, parapsychological or otherwise, was of secondary importance compared to the primary purpose of the ceremony, which was learning how to be helpful to another person. The events of the ceremony had certainly produced strong chords of extraordinary resonance among the participants, naturally creating questions about the processes involved. But these reactions hopefully would not overshadow a concern for whether or not the dream help was genuinely helpful, a question only the supplicants could decide to answer by testing the information in their lives.

Working Through the Research Dance

From the perspective of the question Van de Castle and I posed for ourselves, we judged the experiment to be a definite success. Even though the ceremony was an intentional experiment, it did create a personally involving situation for the participants, and dreams of parapsychological interest were abundantly observed. In addition, the experiment's "cross-fire" design seemed to provide a more informative matrix for interpersonal analysis than the spontaneously occurring dreams I had previously observed.

From the perspective of the validity and usefulness of the help rendered to the supplicants, I view the success of the experiment more tentatively. Here I had two concerns. One was that in our enthusiasm over correspondences, we helpers and the supplicant had, in all innocence, confabulated our diagnosis, and that it would prove to be false or misleading. The other concern was that even though the diagnosis may have been valid, the insights may have been thrust so prematurely upon the supplicant that, from a therapeutic standpoint, the help may have actually been counterproductive. These were general concerns, but I also entertained them particularly for Mary. Although I had a strong clinical intuition as to the validity of our discussion, I was astonished at her initial naiveté concerning the dynamics of her personal situation, and was given cause to be concerned about the stress produced by the rapid insights she experienced. It was with some relief and pleasure that I recently received a letter from her describing how her situation had improved. She was on a prescribed diet, and had lost fifteen pounds. She had found herself employment. Most significantly, she and her mother had entered a therapeutic group for assistance with their relationship.

From the perspective of parapsychological research, I can not pretend to imply that our experiment provided definitive evidence of clairvoyant or telepathic dreaming. The participants themselves raised a number of problems of inference created by the design of the experiment. On the other hand, the phenomena so amply resultant from the ceremony seem of definite parapsychological interest. Also, to the theoretician so inclined, the interpersonal patterns associated with the observed correspondences encourage meaningful psychodynamic interpretation. (E. g., an interpretation of my second dream is that it employed fact and fantasy images of Mary's that were readily associated with some of my personal memories in an attempt to work through the critical unresolved conflict that Mary and I shared.) Finally, the phenomena associated with the experimental ceremony appear to be recurrent. At a later retreat, Van de Castle and I presented a similar version of the dream helper ceremony, with equally satisfying results.

From the perspective of my personal intentions, as in the Dream of the Research Dance, this particular ceremony proved encouraging. Two points of dissatisfaction remained. The first is that it would be beneficial to have a method whereby participants would be motivated by the rewarding growth experience of writing detailed accounts of their participation. The second is that the tendency to confabulate, to unintentionally derive apparently meaningful, but nonetheless invalid, interpretations because of the impressiveness of the correspondence, is not sufficiently balanced by a communal investment in seeking the truth--in this ceremony, it was basically only the supplicant who had something to lose if the help was invalid. I think it may be possible to correct both these deficiencies by creating a communal dream ceremony of a more circular design, similar to that in the Dream of the Research Dance.

Allow me to leave this idea with a brief amplification of the Dream. First, in my personal dream (previously unreported) of the Research Dance, the dancers were each displaying a shield of personal symbols. Second, since having my dream, I have learned that in terms of both the structure and the purpose of the activity portrayed in the dream, this dance bears a striking resemblance to the American Indian Sundance, a ceremony for incubating visions and dreams to be helpful not just to the individual, but also to the community as a whole. These added facts concerning the Research Dance have suggested to me the possibility of a communal self-help dream incubation ceremony. Here potentially parapsychological dreaming could be put into the service of solving a problem in which the entire community of participants would have a deep personal involvement. Such a project might be analogous to setting up an intentional "sapiential circle" of dreamers. A modest but exciting beginning has been made in this direction by my current experimental venture nurturing a participant-subscriber supported research cooperative, Sundance: Journal for a Dream Community, a project which, incidentally, has eliminated the difficulty of obtaining worthwhile written documents. One feature of this experiment is the publication of those subscribers' dreams pertaining to the problem at issue. Here is but one of many dreams received on the theme, Dream America, pertaining to national transformation, an issue for many of us during this trying Bicentennial era:

> It is the morning of Holy Week. A large group of us are headed on an expedition carrying sleeping bags to Washington, D. C. The government is going to throw a tea party in our honor.

* * *

Comments by Robert L. Van de Castle

I enjoyed reading Dr. Reed's account of our dream helper ceremony. It brought back many pleasant memories of our work together last summer.

The ceremony we developed does provide an excellent opportunity for the participants to experience psi on a subjective level. I don't mean to imply that every participant will necessarily have a dream that will capture the target person's problem with Polaroid fidelity, since it is quite possible that a participant may not even recall a dream. But, by making a commitment to join the group and to contribute his effort to the group's goals, the participant will feel that he had played a meaningful role in shaping the psi product that emerges from each group. Each group did develop a distinctive dream mosaic, a mosaic that uniquely reflected the locus of concern generated by each group's target person.

If a participant did not have a dream to share, he had personal experiences or associations to offer. Sometimes these associations would be introduced by remarks such as "I don't know why I'm bringing this up, but maybe it might be of some help." These remarks generally did have something specific to say to the target person, even though they would not have any obvious manifest connection to the preceding conversation. I am reminded here of Freud's statement on The Occult Significance of Dreams:

> I have often had an impression, in the course of experiments in my private circle, that strongly emotionally colored recollections can be successfully transferred without much difficulty. If one has the courage to submit to an analytical examination the associations of the person to whom the thoughts are supposed to be transferred, correspondences often come to light which would otherwise have remained undiscovered.

When Dr. Reed and I carried out a similar ceremony with other groups later in the summer very similar results were obtained. All participants reported a profound sense of fusion and of assimilation into a larger identity where individual ego boundaries were no longer distinct. Participants had experienced encounter situations earlier, but they characterized the dream helper ceremony as something that transcended the feelings of risk, intimacy, or catharsis that were stimulated by encounter sessions. Adjectives like "eerie" or "uncanny" were employed to describe the feelings accompanying the discovery of unlikely correspondences between the target person's mental condition and the imagery shared by the dream helpers.

The ceremony discussed in this paper would not be considered an experiment in terms of classic, academic, nomenclature. No independent variable was manipulated; no quantitative measurements of dependent variables were made; no apparatus was employed; no standardized instructions were delivered. Yet, the results seemed to be repeatable from one group to another. Elements extracted from "primitive" religious ceremonies and methodological techniques adapted from laboratory investigations of telepathic dreams were combined in a humanistic context where group dynamics could be energized for growth and actualization, and remarkable "information exchanges" occurred. Whether delusion or illumination was involved is a question that each reader will have to resolve for himself.

I think that anyone willing to openmindedly read the parapsychological literature will conclude that a very substantial case for the validity of psi phenomena has already been established on the basis of carefully conducted empirical studies. What are needed now are ways to find practical applications for psi that will move us toward a fuller realization and appreciation of the vital linkages that bind us all together. The dream helper ceremony provides a demonstration of one way that psi can be experienced which will remove it from an abstract textbook level of consideration to a "partici-pant-observer" level where psi assumes phenomenological veridicality.

Editor's Conclusion

This chapter concludes the section of the book on psi, cognition, and communication. Greist has emphasized how language and psi appear to facilitate one another, and this suggests a new significance for both telepathic and linguistic factors in human phylogenetic development. Randall has shown how real variants (as described to him by Margaret Mead) of the ideal Sapiential Circle can, through integration of man's intelligence with his psi faculties (thus creating wisdom), vastly and quickly increase human knowledge and upgrade our sociocultural condition. Lastly, Reed presents a paradigm similar to Randall's and gives as a concrete example something resembling an Indian dream quest. The results of this quest are therapeutic, ritual-developmental, and psi-productive, thus giving concreteness to anthropological concepts about mythology, rites of passage, and religion as a tangible support mechanism.

All of these chapters suggest that, beyond the interesting new concepts and data we now have about paranormal phenomena and anthropology, we can revise our thinking in several ways. Most importantly, and in contrast to much of the thinking of both parapsychologists and anthropologists, paranormal events do have important social functions, especially in relation to long-term cultural change. We do not wish to argue for a dichotomy to be drawn between the materialistic and the intellectual or spiritual. But what we can say is that, pragmatically, psi is important. One way of integrating this with current anthropological theories such as those of cultural ecology is to view psi as an obviously adaptive mechanism, socioculturally if not individually. Certainly no materialist would deny the importance of language simply because it is not matter per se. It affects the use of matter, and that is what counts. Therefore, if psi is a part of this same process then it is very much a part of human materialistic-technological adaptation.

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Part IV

The Origins of Psi

HUMAN-ANIMAL EVENTS: THE ANECDOTAL EVIDENCE*

Berthold Eric Schwarz

Editor's Comments

Animal psi is standard material in parapsychology textbooks and a number of books have been written explicitly on the topic. An excellent summary of the experimental and anecdotal evidence has recently been published (Morris 1976). Much of the controlled research of greatest importance to physical anthropology was conducted by a physician whose own institution has disavowed his work (see, e.g., Rhine 1975), labeling some as admittedly fraudulent and the rest as therefore suspect; most of the evidence we have to fall back on is therefore circumstantial, theoretical, or anecdotal.

Castaneda's Don Juan stories contain considerable materials on presumed cases of psi, especially during altered states of consciousness. The editor's own ethnographic field experience contains two detailed and explicit accounts of possible animal-human psi. Hence, because of the potential importance of this aspect of psi to both physical anthropology and ethnology it was felt that some of the evidence should be presented here. Since most anthropological data are anecdotal and since Schwarz's materials cover a large range of phenomena, this chapter serves as well as any as an introduction to concepts involved in the parapsychology of animal behavior.

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* * *

Folklore, myths, and legends supply countless examples of the strange affinity between man and animals. V. and M. Gaddis (1970) have recently collected many provocative examples of this. Sanderson (1972), a well-known biologist, has also noted many such events between a variety of species and man. One case studied by the psychoanalyst-parapsychologist Nandor Fodor (Carrington and Fodor 1952) concerned the bizarre poltergeist example of a talking mongoose. In another study Fodor (1968: 121-125) cited and speculated about the amazing animals that materialized in seances witnessed by eminent scientists. In his memoirs the newspaperman Pierre van Paassen (1936: 248-251) wrote about his personal experiences with a possible poltergeist dog that savagely fought with his two German Shepherd police dogs, one of which dropped dead immediately afterward.* Other celebrated controversial man-animal biocommunications include horses that were allegedly telepathic† and could calculate, and of course the not uncommon news stories of cats and dogs abandoned or lost and then returned over great distances and time. The scientist Milan Ryzl (1970) has summarized much of the animal parapsychological data. Von Urban (1958: 206-207), the psychoanalyst, recalled his own turmoil and the bellowing and howling of animals before a major European earthquake in 1896 [compare with Beal's interpretation in Part II--editor]. The research physician Abraham Ginsberg, who independently discovered a device similar to radar, recalled how when he was living in the Adirondacs his dog crawled under the bed and stayed there every time his sister, who was very fond of the animal, was operated on by Dr. Will Mayo in Rochester, Minnesota (Schwarz 1968a). Lilly (1962) has studied the intriguing communications between man and dolphins. Keel (1970) has recorded many bizarre man-animal interactions that deserve serious consideration.

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*Barnett (1963; 1967: 79-85) has observed similar or perhaps identical deaths in rats. Although this might suggest voodoo or hex death (see, e.g., Lex 1974), Barnett states that no wounds, signs of shock or vagal syncopy were present on autopsy. This suggests the mechanism of PK, acting at the central nervous system level (see Walker & Eisenbud chapters) as causal, rather than a vague, psychosomatic-systemic "shock" factor. The following chapter suggests how the "signal" of life termination may be communicated among primates in the absence of normal cues. --Editor.

†Joseph Dunninger investigated several "horse telepathy" cases and never found a clear example of paranormal ability; he contended that the horses were trained to respond to complex cues.

Although Grad, Cadoret, and Paul (1961), in well-controlled laboratory studies, demonstrated the effects of psychic healing on guinea pigs, there has been little critically analyzed clinical material presented in the medical literature. The telekinetic hypothesis gives clues for a possible modus operandi for placebo effects in the study of drug actions, and it might explain the different results sometimes obtained from identical experiments by various investigators. This is a practical question which should not be overlooked.

Because of the intimate nature of their work, psychiatrists are favorably situated to observe possible telepathy between patients and their pets, as well as to be sensitive to such possibilities in their own lives. For example, Krystal and her sons presented convincing evidence of how, when she was traveling in Mexico she telepathically (and correctly) learned of her dog's death in Maryland. In a planned experiment that was spontaneously derailed, she telepathically picked up many of the segments of a horrible situation where a dog savagely attacked a friend of mine (Schwarz 1965; 1968b).

Pets, mostly dogs and cats, have always played a large role in the personal life of the distinguished telepathist, Joseph Dunninger. Both Romano and Dunninger, interestingly enough, called attention to the possible telepathic affinity between cockroaches and man. For example, if one thought of squashing a certain cockroach in a group of several, that specific cockroach would frequently scamper away. The parapsychologist Anita Gregory (1971) reported some cockroach experiments done by Russians which were based on an earlier study done by an Israeli scientist; and recently Schmidt (1970) has reported his investigations using cockroaches. Related psi occurrences have been observed (Schwarz 1965; 1968a; 1968b). The following examples from research on Joseph Dunninger, from psychiatric practice, and from personal life, explore this topic.

Cats

Dunninger once recalled an event which happened near the turn of the century when he was a child. His older brother Louis had become acutely ill with an obscure fever and an oozing discharge from the eyes, nose, and ears. Every day for several weeks between midnight and one o'clock in the morning, Louis would become very frantic, exhibit violent behavior, and "the family had a hard time holding him down. Dr. Steinach, our family physician, and later consultants were unable to make a diagnosis or prescribe a remedy that could relieve the condition."

Dr. Steinach, who knew Mr. and Mrs. Dunninger, Sr., very well, surprised them by asking: "Do you believe in witchcraft? Lou's illness is so bizarre that I wonder if it could be caused by suggestion or a curse. I have read many books about this kind of thing in medieval Scotch-English literature." The doctor was cautious in his statements because he knew this was a way-out position for a physician; and furthermore, neither Mr. nor Mrs. Dunninger believed in the supernatural. Nevertheless, the very day of the physician's statement, the family's white cat disappeared from their home in New York City without apparent reason. The next day, an employee of Dunninger's father, a Mrs. Ellit, who also knew the brothers and who had originally given them the white cat as a present, surprised the family by returning the cat. Mrs. Ellit lived on the lower East Side, more than a mile away from the Dunninger factory. She said, "The cat came into my house last night; it must have escaped."

Joseph Dunninger commented: "This event made my mother and father very suspicious, for on the night that the white cat disappeared my mother saw several cats sitting on the window sill of Lou's room. Although the window was closed, my father had to get the broom and chase them away.

The following morning, when Mrs. Ellit brought the white cat back, my mother accused her of bewitching the cat and of cursing Lou. My father fired her.

"My parents knew that Mrs. Ellit was a vindictive woman who felt she was given less sewing than the other German and Italian women who worked in my father's factory. Mother was infuriated. She picked up a pair of sheers and said if Lou didn't improve she'd kill the woman. Mrs. Ellit took the white cat away and from that night on Lou gradually improved until he was better. We never told him the story because it would upset him."

The Dunninger family had numerous cats and dogs as pets through the years but they never had cats on the window sill, as happened that night. "When Dr. Steinach heard of the strange events, he suggested that if we ever saw Mrs. Ellit again and she touched Lou or one of us, Mother would strike her. One day Mother met Mrs. Ellit by chance on the street and when the lady touched Lou, Mother hit her on the hand. Although Dr. Steinach didn't believe in the supernatural he had an interest in the occult. My parents just accepted the doctor's explanation and that was that."

Many years later, when Louis was 21 years old, he died on December 21, of tuberculous pneumonia. Joseph Dunninger recalled: "The night before Lou died he yelled to me to come into his room and screamed, 'Look out the window. Get the cats away. They're bothering me. They'll kill me. I can't sleep!' There were no cats. His room, and mine which was next door, was high up, and cats couldn't climb up the side of our brownstone building. This was the first time Lou ever mentioned any cats. Nothing like this had happened before."

Another event related to these cat experiences occurred in October 1933, about 31 years after Louis' death, when Joseph Dunninger, with the New York Journal American staffwriter Joe Cowen and columnist Louis Sobel, wrote a series of articles on Dunninger's investigations of spiritualistic mediums.

One day they purchased a Harlem newspaper and read ads about mediums and fortunetellers. They chose one name and immediately dropped in unannounced. Among several items this otherwise unprepossessing tall, thin Negro medium told them was that Dunninger had a brother who had died as a young man and that his death had something to do with cats. Furthermore, she described a particular type of high collar that bothered Louis in life, so much that he couldn't wear it. Dunninger was quite taken aback: "I wasn't thinking of this: if anything I expected to have a laughable reading and to hear only nonsense. But what she said was all true." His brother never liked high collars and preferred a winged collar. Also, when Louis died, the undertaker tried unsuccessfully to dress him with a high collar. The undertaker called Joseph Dunninger for instructions, and he was told to substitute a winged collar. Only Dunninger knew this.

The last major family cat experience might have happened when Joseph Dunninger's mother was in the twilight of her life. Once she went away for a few days. Her cat, Mimi, who was accustomed to lying contentedly at the foot of her bed and purring, became very upset--apparently at being abandoned--meowed incessantly, and refused food. Only when Dunninger summoned his mother and she returned, did Mimi settle down again. This happy state persisted until Mrs. Dunninger's death. Then, contrary to expectations based on the previous experience with Mimi, the cat surprisingly enough jumped up on her mistress's bed, looked around, "as if someone were there, purred, and assumed her serene previous adjustment." This continued until she died several years later and was interred with her former mistress.

The accounts of cat episodes which were always similar, were related to me by Joseph Dunninger on many occasions through the years. They were buttressed with appropriate scrapbook newspaper clippings and independent corroboration by Mrs. Joseph Dunninger and Joseph Dunninger's late older brother Max.

The Bat

My wife and I took my "summertime bachelor" colleague, Dr. Brewster Breeden, to dinner for the first time. I knew that part of his military service had been in Japan so I told him about a fascinating article in Science that I had read earlier in the day. It was about the U.S. plans for using bats to which incendiary bombs were attached as a secret weapon against Japan during World War II. This was a focal point in our discussion. After my wife and I had returned from dinner and had retired, we were awakened at 1:30 a.m., hearing a strange noise--first a pummeling against the screen and then odd sounds all around the bedroom. When I turned on the light, I found a bat, by some freak accident had crashed through the screen and was flying around the room. This happened on July 23, 1960; it had never happened before nor has it since. One wonders about a possible communication, coincidence, synchronicity, or precognition.

The Squirrel

A middle-aged woman was visiting her sister in a nursing home. It was the ninth anniversary of the sister's severe hemiplegia and motor aphasia. Although the sister could comprehend sufficiently to successfully manage her investments, she had to be fed, dressed, pushed around in a wheelchair, and attended constantly. The visitor, who was an animal lover, noted that her sister was concerned over a newspaper article she had read a week before about numerous animals in the South that were killed on the highways because of the drought. On the way home the woman went into a florist shop that she seldom patronized and among many items bought a stuffed toy squirrel as a surprise present for her sister. She later learned that at this time, many miles away, the nursing home attendant had wheeled the sister outdoors where she had a shocking experience: a squirrel jumped into her lap and ran up her arm and lay on the back of her neck--apparently the animal was tame. When the nurse swatted the animal with a newspaper, it jumped down, ran up the nurse's leg and bit her. The police were called, and they shot the animal.

The squirrel's head was examined by the Board of Health for rabies, but no disease was found. Was this coincidence? Or, could this unique experience of the disabled sister with the squirrel have telepathically prompted the sympathetic woman (who was an animal lover) to buy the toy squirrel at that exact time (there were other choices) as an unusual telepathically occasioned means, as described elsewhere (Schwarz 1971a: 98), of reassuring the sister that the animal was really harmless and should not have been shot? Or, did the kind thought of buying the stuffed animal in some way cause an interaction between the disabled sister and the squirrel who took a short-lived liking to her? A possible telesomatic exchange involving this woman and her family has been described (Schwarz 1967a: 600-603).

The Robin

Lester Riley, a middle-aged handyman-gardener of old Scotch-Irish stock, was standing by his truck in the backyard of my New Jersey house telling me about the trip he had to make to Virginia the coming weekend to see his 90-year-old mother, who was ailing and might be dying. While he was describing his mother's health, we were startled to see a bird (a robin) fall from the sky, crash onto the hood of his truck, and skid onto the ground. It gasped and died. Neither of us had ever had an experience like this before nor have we since, although I had on rare occasions seen birds crash into the window when the lights were on in the office. It was a cloudy, cool day, and there was no apparent reason for this strange happening. I immediately looked at Mr. Riley and said, "It's very odd, but I guess you'd better go at once." Although I was not superstitious, this statement was foolish and out of place for me. When I next saw Mr. Riley, a week later, he said that because of the weird coincidence, he left immediately for Virginia instead of three days later, as was his original plan. He arrived just before his mother died. When he told his brothers and sisters about the bird experience, they were astounded. They all vividly remembered how twenty-five years before their father, who was in poor health since an auto accident three years previously, told them how he saw two bluebirds flying out of a window and interpreted that as an omen of his death--which happened three days later. Mr. Riley was so disturbed over these dovetailing coincidences involving his parents that he discussed them with his minister.

The Eunuch Cat

A young housewife, who had chronic anxiety hysteria and who had been adopted as a baby, had many telepathic events in her life and treatment. On November 8, 1966, she came to her session and told about an odd event with her seven-month-old male cat. She and her husband had planned to leave for an Atlantic City vacation late one night, but had to postpone their trip until early the next morning because their cat, who was to be spayed in their absence, had suddenly run away.

The cat, who was outside and therefore did not see them pack their suitcases or make preparations, had never run away before. They searched for him in vain. When they got up early the next morning, they still could not find the cat. Finally they received a telephone call from a neighbor who said the cat was in their backyard. The cat refused to be coaxed home, however, and ran away again. In anger, the woman asked her husband's sister who worked for a veterinarian and was familiar with animals, to have the cat castrated while they were on vacation. When they returned four days later, they found the cat meowing and shivering in their parked auto in the garage. The husband's sister said that when she came to the house on the morning they left, to take the cat to the veterinarian for castration, he attacked her, ripped her sweater, and scratched her whenever she tried to get into the car. So she left the cat and went home. The cat had no food or water for this period of time.

One can wonder if this usually docile cat sensed the events to come.

As a sequel (Schwarz 1966: 64-82) to this experience, in a session at 2:15 p.m. on February 2, 1970, this woman patient, who also had endometriosis and tried to become pregnant for a long time, asked me about spaying my cat. She recalled the aforementioned example (her cat was finally spayed), and then said that she had just returned from an appointment with her gynecologist who advised her on the eventual need for a bilateral oophorectomy (removal of both ovaries).

Prior to this patient's session I wondered when my paper (Schwarz 1967b) on Edison and Dunninger would be out. In truth, during the session my mind occasionally drifted to this personal matter, and during this interplay of polarized material involving the previous possible telepathic cat experience, the patient's discussing the castration of my cat, and her own procreative difficulties, plus my thoughts of Dunninger, Joseph Dunninger telephoned me about another weird story concerning his cat, who was just spayed! Touché.

As a backdrop, it should be mentioned that this patient, whose husband's family had once been patients of my father, had one striking thing in common with the outstanding paranormal event in Joseph Dunninger's early life. During our session on October 2, 1969, she talked about the fiftieth anniversary of the Slocum disaster (celebrated one year previously) in which her father-in-law's mother and sister and several other relatives perished. Ever since that session, I wondered about the odd coincidence of this event that associatively linked me through her to Joseph Dunninger. From the thousands of patients and myriad hours of psychotherapy, I had never come across this specific associative link before. One of Dunninger's most vivid childhood memories concerned his father's prophetic dream of the Slocum disaster, which occurred June 15, 1904. Dunninger and his two older brothers were planning to go on an annual outing up the Hudson River on the steamer General Slocum until their father, following his prophetic nightmare, forbade them. He ran around the neighborhood and kept thirty to forty other children from going. The General Slocum caught fire, and in a concatenation of horrible mishaps and errors, 1031 lives were lost. It was the greatest peacetime ship disaster in the United States.

The last part of the patient's session was concerned with her dream of an airplane crash, which she associated to a recent Swissair disaster in which forty people were killed by Arab terrorists, who claimed they planted a bomb because of suspected Israelis on the plane. Although the patient's session was over and she did not elaborate on her dream, I inwardly smiled at this capstone of the fusillade of associative telepathy, because in all of his career and worldwide travels, Dunninger had never flown until very recently. Very few people knew of this fact and virtually no one knew of Dunninger's past telepathic and precognitive experiences that may have accounted for his fear. It was no wonder that Joseph Dunninger made one of his infrequent calls to my office during this session of telepathic criss-crossing a trois when one considers the matrix of polarized associations.

At first glance it might be hard to follow these reported complex interactions and the psychic nexus, but this is the essence of telepathy and the associations are simple and more easily grasped if the telepathic hypothesis is used. Once one hears a Chopin nocturne, one does not chose "Chopsticks." As the therapist calls on his (and his patient's) reservoir of experiences, he finds telepathy a useful tool in treatment. This example is in accordance with what happens in the physician-patient relationship in psychotherapy or Professor Tenhaeff's (1965) observation that the paragnost continually rediscovers himself in his consultants. The sensitized areas seemingly reverberate ad infinitum. In a related vein, Joost A. M. Meerloo (1970: 144) wrote, "... in the psychic world, the new time contains an older one. In the sequence of mental events, later moments include earlier ones."

The Monkey

A senior premedical student in psychotherapy, who was working on a monkey project with a psychiatrist, came into his session to report a possible telepathic episode between a juvenile male rhesus monkey and himself. The patient had just finished a seven-month period of controlled observation--totaling 232 hours--and he and his mentor were preparing to kill the monkeys in order to section their brains. Four of the seven monkeys had each undergone a midline thalamotomy (removal of a portion of the brain) to study the effects of that lesion on their social behavior. In no previous sessions did the patient note any unusual exchanges between the seven monkeys and himself. This was also his experience from more than forty hours of observation of a colleague's monkeys (four had dorsal lateral frontal lobotomies; four were untreated). However, now he noted: 'We have a chain hanging from the ceiling of the enclosure, which the monkeys either held in their hand and walked around in bipedal fashion, or climbed up and down when playing with the others; or they would mouth the chain. I always wondered why they did not swing on it. While I was thinking about this, Nelson, who was an operated monkey, suddenly grabbed the chain and swung like Tarzan. Nelson, the third of a group of seven, was shy. He was different from all the other monkeys in that he was the only one who would look me in the eye. I felt close to him. The next day when I entered the room to complete my observations, I wondered about the previous day's performance. Nelson swung like Tarzan for the second time!"

It might be wondered if the patient was upset about the forthcoming sacrifice of the monkey. Perhaps he sent his thoughts to Nelson, who of the seven was closest to him. Possibly the monkey had some awareness of the significance of what would shortly follow and reacted telepathically by complying with the researcher's wish. The repeat performance might have supported this view because, although this thought was not foremost in the researcher's mind, both he and the monkey were sensitized to his behavioral communication. Although the data in this case are insufficient, it would be of interest to keep the psi hypothesis in mind in a variety of experiments with animals who have undergone various neuroanatomical and other (e.g., bilateral adrenalectomy) extirpation procedures.

This patient has had many telepathic episodes in his therapy, including telepathically detecting Christian names on occasion, foretelling his physician's unannounced short trip out of the country, and one spectacular tracer-laden overdetermined episode of telekinesis with built-in controls involving an exploding can of carbonated soft drink.

The Myna Bird

A referring physician, Dr. L., whom I have known for more than thirty years, invited me to his home to meet a middle-aged couple who were also his patients and neighbors. It developed that I had seen the wife's father years ago in electroencephalographic consultation and I had known the husband, who was the manager of an automobile agency I had dealings with off and on for many years. He tole me the following story, which was confirmed by all present. Although anecdotal, the veracity of the informants was impeccable.

'Walter was my father's and my father-in-law's good friend, and he also was my sister's father-in-law. Walter was an inventor who lived in Florida, and he was a former patient of Dr. L. Walter was an alcoholic, and when he had been drinking he could be very mean. On a number of occasions he jokingly told his son, daughter, my mother-in-law, and others, 'When I die, I'm coming back as a myna bird.' No one knew why he said this since none of us ever had a myna bird or an unusual experience with one. It was just his dumb joke. This stuck in my mother-in-law's mind, and when Walter died in Florida a few years later, my parents attended his funeral. Following the services they returned from the interment and sat down in my parents' patio to have a drink. They were all amazed to see a myna bird in a tree in the back yard. My mother-in-law shouted, 'That's Walter!' The bird stayed there for one week and then flew away. This was in Florida, and it should be noted that these birds are not native to that state, and these people had not had this type of experience before.

"Then a few days later the myna bird turned up at my brother Rolf's house. The bird followed Rolf on his rounds--he has an advertising agency and travels all over Palm Beach. Wherever Rolf would go, there was the bird. Finally, the bird disappeared and they didn't see him again until my father died eight months later, on his birthday, January 14, 1969. Remember that Walter and my father were also good friends, and that Walter joked how he would return as a myna bird.

"I flew to Florida from New Jersey to make arrangements for my father's funeral. Throughout the whole service in the funeral home Mother and all other members of the family saw the myna bird in the window--that is, before they took my father to the cemetery. After the service we drove to the cemetery and there was the myna bird sitting in a tree, looking out at the grave. Walter was buried only two graves away from my father's. Three days later the myna bird was again in my mother's backyard where she saw him for the last time.

"However, the finale occurred just this winter [February 1972], four years after my father's death. For three weeks we had a myna bird fly to our backyard in the morning and spend the day with us, take off, and then come back the next day. I fed it suet, apples, and even bought 25 pounds of sunflower seeds. I'd go out and say, 'Hello, Pop!' The myna bird wasn't afraid of us, but he wouldn't come and perch on our hands. My wife called the Turtle Back Zoo--they had a few reports of the bird--and they sent an expert over to capture him, but the bird eluded him. Our home is in a wooded suburban New Jersey area and there had been snow and ice. Finally it must have gotten too cold for the bird and he took off. It is odd that this incident happened at the approximate time of my father's birthday, which was also the anniversary of his death."

On June 7, 1972, while at the annual Associated Physicians' Banquet, Dr. L. and his guest, the automobile agency manager, called me over to their table. The manager wanted to tell me the latest development: "The oddest thing happened two Saturdays ago when my mother returned from Florida to New Jersey. While she visited my family in our backyard, there, again, was the myna bird in a tree. We hadn't seen him since February, or after this visit with Mother. My wife was so upset that she wouldn't talk about it." The manager then repeated his strange story to several curious physician friends at the table. He looked in vain for an explanation.

The next time I met the manager was at the annual banquet, one year later. He seemed perplexed as he related the most recent development: "On the anniversary of Father's death, Mother and I flew to Florida where we joined my brother and drove to the cemetery. There, on the branch of a tree overhanging the grave, was the myna bird."

Comment

Examples of these strange, spontaneously occurring paranormal events between man and beast could be greatly expanded. The exact nature of the events makes coincidence and chance an unlikely explanation. What can the link be between man and his pets, and between man and sometimes exotic wild animals? Could similar interactions from ancient times have been the source of the worldwide legends, myths, and superstitions of dragons, monsters, witch's cats, etc.? How might possible man-beast paranormal events tie in with the many documented accounts (see e.g., Creighton 1970-71) of UFOs (including "flying saucers") whose presence has often been heralded by animals such as barking dogs, clucking chickens, stampeding cattle? Keel (1970) has shown how UFO experiences often have associated paranormal activities, including telepathy, poltergeists, precognition, etc. Could the key to an understanding of psychic matters be found in the mystery of ufology, or vice versa? Are there other dimensions to the life spectrum so that when man-beast sensitivities are attuned to a common resonance these strange communications can take place? What might be the common physical modalities for such esoteric biocommunications? Are they, as it seems, outside the electromagnetic spectrum and do they comprise some untapped source of energy? What might be the man-beast neuroanatomical and physiological substrates? Could animals be telepathically summoned, hallucinated, teleported, or materialized when the man-beast needs and other factors are spontaneously fulfilled?

Eisenbud (1966-67) has posed an intriguing exploratory generalization which he terms the "principle of confluence, according to which 'psi'--some basic psi manifestation that is, not just telepathy or PK, for example--is, like other great process-abstractions in nature (e.g., electromagnetic, or, queer as this sounds, 'the unconscious'), an integral component to all events (change of state of definable systems, let us say) and as such [is] represented in some measure as a determinant of the final, common pathways of these events."

The study of human-animal paranormal events should be vigorously pursued. If such disparate data exist, they should be used and not swept under the rug. The clues for the solution of the riddle are there.

* * *

Editor's Conclusion

Schwarz has presented a number of interesting stories. Some parts of these can be explained--are probably best explained--by chance. Others defy the limits of coincidence. As Schwarz himself admits, there are probably different sorts of psychological and parapsychological phenomena demonstrated in each story, and yet no pat answers emerge as to how animal psi works in these bizarre ways.

In commenting on his article, Schwarz has already related his materials to a wide variety of other topics in the present volume: psi and cognition (of Part III), Beal's and Walker's explanations for certain consistently occurring physical events, Eisenbud's psychoanalytical interpretations about coincidence, confluence, and causality, the editor's view of psi as serving real functions such as those of biological adaptation, and even Lyon's interpretation of staring among primates.

Although the chapter is not included for this explicit purpose, it does illustrate the "static" or "background noise" problem which some anthropologists will discover when attuned to observing the paranormal in fieldwork. Aside from the psi we may expect to find within specific cultural contexts (trance, drugs) there will be a great deal more which will have no obvious meaning, cultural or otherwise.

Schwarz alludes to some problems of which the novice to parapsychology should be aware (and to which I shall direct myself in the concluding chapter): that of mass telepathy (all observers see roughly the same thing) and that of materialization. Although we have material evidence for the existence of UFOs, there is much to suggest that some sightings represent mass telepathy; the same goes for levitation. Now, with studies of Uri Geller and others (and some of the photographic phenomena reported for UFOs), there is increasing evidence that materialization and dematerialization can occur. So, the UFOs may be examples of hallucinations, mass telepathy, individually induced materializations, PK effects on photographic film, or visitations from other planets. The world of the paranormal is not an obvious one.

This is perhaps most perturbing as it relates to survival after death. Much research is being conducted on this question, a perfectly legitimate one, and most of it clearly shows that there is a survival. At least, if one comes from a Christian or Hindu background. Then, the myna bird obviously proves survival. But for the materialists it must be noted that everything in survival research may be explained in terms of the psychodynamics of telepathy, materialization, PK, or other known paranormal phenomena.

In summary: Schwarz provides a multitude of anecdotal evidence for psi in animals, but he recognizes this as human-animal psi in which the humans may be the only active agents. As in the case of most laboratory experimental evidence, this sheds little light on the problem of the evolutionary history of psi development.

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COGNITION, PRIMATOLOGY, AND PSI DIMENSIONS OF HUMAN VISION

William S. Lyon

Editor's Comments

In attempting to answer some riddles going back to the very origins of modern ethology (the "new" physical anthropology), Dr. Lyon has inadvertently opened new vistas regarding cognitive processes and communication theory. His data suggest that eye contact enhances psi! (Greist, above, shows that verbal communication also enhances psi.) We have known for centuries that eye changes reflect physiological differences and, for more than a decade, that pupillary changes reflect in some way the general attitudes we exhibit, at least, towards photographs (Hess 1965, 1975). But Lyon's work suggests a logical cognitive ability beyond any suggested by either parapsychologists or psychophysiologists: eye contact and psi act synergistically. That is to say, both pupil size (in combination with facial expression) and telepathy have independently some degree of communicatory value, relaying some weak signals concerning vague attitudes, pictures, and design, but when they are combined, transmit a far stronger, more specific, and more consistent emotional message. Viewing aggression and other adaptive emotional states within the framework of cultural ecology, it is easy enough to see psi-eye synergy in communication may have been of the utmost importance to the survival of different species throughout the entire period of primate evolution. One might further postulate that psi-eye synergy, and its limitations, was an essential ingredient in man's first developing language, although to do so would go far beyond our present data.

The critical reader will immediately recognize that the research reported here automatically incorporates many procedures which render the tests somewhat unreliable and therefore make conclusions doubtful. In fact, allowing of eye contact in itself breaks the cardinal rule of telepathy experiments: all forms of communication other than telepathy should be rigorously excluded by the research design, and doubtlessly some parapsychologists will argue that the experiment is invalid for this reason. But how is one to test for synergy without testing both variables at once? It may further be argued that Lyon has presented no statistical analysis of his results, but it should be noted by those who put all their chips on chi squares and T tests that since all of the choices on all three trials were not the same there is no statistically logical way to compare results. Aside from that, the experiment was exploratory and therefore not designed to be amenable to statistical testing; although the importance of the results given in tables I to III is obvious, it should be noted that specifically statistical tests are in progress, with so-far excellent results (Lyon 1975). In sum, the research of Lyon and Greist must be recognized as highly exploratory but of great potential.

Several stagnating areas of interest might well profit from the adoption of designs similar to Lyon's. The most obvious is cognitive anthropology. Use of semantic analysis to study changes in culture indicates that traditional cognitive approaches are poor at providing concrete explanations in contexts such as indigenous curing where paranormal and psychosomatic factors are intricately intertwined (Long 1973). Castaneda's (1974) work presents a great challenge for cognitive studies, but it has become increasingly literary at the expense of real scientific imagination. It is not anticipated that Lyon's work will be a cure-all for cognitive's doldrums, but it does suggest one of several promising directions to be taken.

Except for the work on revitalization movements (Wallace 1966), the anthropology of religion has never had much dynamic content beyond providing pat functional "explanations" for the ethnography of social anthropologists. Considering the volume of literature on PK, might it not be logical for anthropologists to return to the dual concepts of _mana_ (impersonal supernatural power) and _taboo_ (negative or dangerous power) and reexamine their true significance? Nobody has discussed the PK of Uri Geller in these terms, but there are occasions in anthropology where the possible relationships are too direct to gloss over. Lyon (1974), in discussing the possible material basis for the concept of evil eye, or _mal ojo_, says, "one of my students swore that an African shaman once literally knocked him down by merely looking at him." The parallel with LaBarre's (1962: 39) filmed observation of snake handlers' knocking over followers who "toppled" like "tenpins" is obvious. So, if physicists can study PK as a dynamic, real force in the laboratory, is it too much to expect anthropologists to examine it as a possible force among primitives within their field-laboratory?

* * *

Staring Taboos and Mal Ojo

There is a standing taboo, at least in most Western cultures, with respect to looking at other individuals, especially when two persons simultaneously look directly into each other's eyes. Most everyone in this culture experiences an uncomfortable feeling when they know that someone, especially a stranger, is staring at them. In fact, our own culture takes definite steps to socialize children not to stare under the auspices that such activity is "rude" or "impolite."

This fact, coupled with the observation that children under three or so years of age seem to have a natural tendency to stare, particularly at strangers, causes one to wonder just what it is that they "see." For example, quite often a very young child will look intensely at a stranger and then break out crying for seemingly no reason whatsoever. Close observation of this activity would probably show that more is involved (each time this occurs) than merely the "strangeness" or unfamiliarity of the individual looked at.

This taboo against staring is not a particularly recent cultural phenomenon and more than likely has deep historical roots in such superstitions as the "evil eye." The belief that an evil person can injure you by merely staring at you is referred to in writings from ancient Egypt, Babylonia, and other early civilizations (Elsworthy 1895). More recently Tomkins (1963: 159) has written that: "The most ancient and universal belief is that the eye of an evil one will injure wherever its gaze happens to fall."

It would seem unlikely that such a widespread belief as this does not have some phenomenological basis. That is to say, the actual basis for such a belief more than likely lies somewhere within the realm of human experience. In fact, quite often in our own culture persons experience the feeling that someone is staring at them only to look around and confirm that such is the case.

If such experiences do exist, what then is their biological and/or physical basis, if any? With regard to psi phenomena such experiences are possibly in some way associated with telepathy. However, since we still do not completely understand the mechanics of telepathy it is hard to speculate just how related these types of experiences are. In any event, it is quite possible that during direct eye-to-eye contact between two individuals there is some communication occurring that is very similar to our notions of what constitutes telepathy. For example, it has already been suggested by Kendon (1967) that direct relations between two individuals are intensified during extended direct eye-to-eye contact with each other. What exactly then causes this experience of increased intensity?

This article reports on a current experiment underway that was designed to unravel empirically some of the dynamics of human eye-to-eye contact. The experiment, published here for the first time, originally grew out of a concern to test one of the basic assumptions being made today in primate field studies, namely, that when two primates (usually males) stare at each other it constitutes a threat gesture. My suspicion was, and still is, that much more goes on during periods of direct eye-to-eye contact and that failure to recognize this fact probably stems from the seeming inactivity of the primates (human or non-human) involved, coupled with, in the field observer's mind, the above-mentioned ethological assumption that it is "rude" to stare at another individual. In some respects the field situation may be seen as analogous to a researcher observing and making notes on a person who is watching a movie. As long as the researcher himself cannot see the movie there are going to be some unavoidable difficulties with regard to his ability to determine what, experientially, is going on with the person who is watching the movie. In fact, the general inactivity of the movie watcher might well lead the observer to assume that nothing is going on. In the same manner, when two primates stare at each other and no movement or other visible signs are apparent the field recorder often assumes nothing happens and that there is no communication occurring.

Components of Vision

For discussion purposes only I would like to arbitrarily divide human vision into two components, a horizontal and a vertical dimension. The horizontal dimension involves cross-cultural differences in human vision and perception. These differences are based mainly in the different world views that have evolved in different cultures. They are also related to the ecological setting. For example, cross-cultural differences have already been well documented with regard to perceptions of color, figure-ground reversals, illusions, space and other such phenomena (Segall 1970; Hudson 1970; Turnbull 1962).

The other component of vision, the vertical dimension, involves what I term one's emotional depth of perception. This aspect of seeing is, no doubt, also somewhat culturally determined, but more than likely it is more variable within any one culture than is the horizontal component of vision. With respect to psi phenomena vertical seeing would be exemplified by the ability of some people to see "auras" whereas many do not. It would also include the "seeing" spoken of in length in the recent works of Carlos Castaneda (1968, 1971).

I have used the label "emotional depth" simply because there appears to be a direct relationship between the development of this component of vision and one's ability to perceive correctly the emotional state of any other individual. It is in part what we refer to when we say that someone is very "sensitive." Again, with respect to psi phenomena, the highest development of vertical vision would possibly be that of "gurus" et alii who have the reported capability to "see" one's thoughts--all thoughts, be they present, past, or future. On a level which more of us can relate to, most adults in the Western culture can, for example, readily distinguish between--i.e., "see"--the emotional depths of a romance between junior high school students as opposed to a romance between college students. Few parents take the junior high school ones seriously, even though the young people themselves consider it to be very serious. I would contend that the adults do this not because they feel that the youths are too young to get married, etc., but because they "see" a certain lack of emotional depth to the relationship given their own emotional depth of seeing or vertical dimension of vision.

"Seeing"

One assumption being made here is that there exist certain attributes of what we call emotions that transcend all cultures. For example, we are assuming that there are certain qualities to human sadness that, given a certain development of vertical vision within any individual can be detected by that individual without regards to culture. For example, such persons would be able to recognize sadness in a Russian, Colombian, or Polynesian whenever it occurred by merely directly observing that individual. This implies, in fact, that at their root human emotions may have a common biological and/or physical basis.

One very popular, current attempt to study the dimensions of vertical vision is being made through the study of body signals or body language. From my perspective, however, these studies only begin to touch the surface of our understanding of the depths to which vertical vision can operate. In a sense these studies are analogous to making personality assessments based on one's clothing habits. As such, they may tell us something but the correlations are not very strong. The attractivenss of these studies is that once brought to one's attention the body signals can be readily seen by almost any observer. On the other hand, bringing one's attention to human auras does not necessarily enable anyone to see the auras. But both of these phenomena are interrelated, being aspects of vertical vision, and differ not in kind but in degree. A corollary to this statement would be that part of the apparent disparity between esotericism and science is probably associated with merely different degrees of vertical vision in different individuals. If, for example, the director of the National Science Foundation could "see" what Don Juan (Castaneda 1968, 1971) claims to "see," psychical research would more than likely be as readily funded as body language research.

Sight, Aggression, and Primate Survival

The experiment presented here was designed to measure the ability, if any, of different individuals to identify the emotional states of another person during direct eye-to-eye contact. The early primate field reports of the 1960's began to repeat a theme with respect to eye-to-eye contact between troop members. Essentially the theme was that mutual glances between dominant males initiated threat displays. Hinde and Rowell (1962) reported this for rhesus and bonnet macaques, Shaller (1963) for the mountain gorilla, Hall and Devore (1965) for the baboons, and Jay (1965) for the langurs, to mention but a few of the reports. Because these early reports did not note much else with respect to eye-to-eye contact behavior among the troop members, by the late 1960's we began to settle into the notion that, as far as any communication signals were concerned, eye-to-eye contact did not constitute much of anything signal-wise other than threat gesturing. In fact, some authors were even so bold as to suggest that, with respect to our own culture, this is the very reason why we teach children not to stare at other people--because it is a form of aggression (Rowell 1972: 86).

At this point my own feelings were that some basic questions went begging here, and that quite possibly some of our implicit assumptions concerning the actual dynamics of eye-to-eye contact were really not substantiated. To begin with, at whom do children have a natural tendency to stare? What are the available signals that seemingly cause them often to fixate on other individuals, particularly strangers? Why do very small children sometimes burst out crying when merely looking at strangers?

Behind all of this there seemed to be one rather critical assumption being made. This was that during eye-to-eye contact no particular information was passing directly between the eyes themselves, but that the information was coming from a complex combination of visual signals including facial gestures, body stances, etc. As such, when two primates looked at each other in what was labeled as a disinterested gaze the implicit assumption made by the field observer was always that no signaling was occurring. The question then became: Is that not possibly an ethnocentric assumption, especially in a culture that conditions its members not to look at each other in the first place? For instance, because no one had ever been able to teach chimpanzees to utter more than a few words, and because we made the simple ethnocentric mistake of equating talking with the production of words, we remained blind for many years as to the actual language capabilities of chimpanzees.

The critical question that seemingly needed to be tested here was: In and of themselves, how much, if any, information can the eyes alone communicate? In making a search of the literature I was unable to find any material that eliminated all other variables and dealt only with direct eye-to-eye contact. Most of the research dealt with eye-to-eye contact between completely exposed individuals and, as such, would include a whole array of variables related to non-verbal communication such as facial gestures, etc. Perhaps the most thorough work to date along these lines has been done by Ralph Exline who, for over ten years, has studied the dynamics of eye-to-eye contact and avoidance in different contextual situations. One of his more recent works (Exline 1972) categorizes eye-to-eye contacts between individuals into either glances of power or glances of preference.

Research Method

Since I was interested in testing only for the eyes it was necessary to construct an apparatus that allowed the subjects to only observe the eyes of another individual. As such, we constructed a large cardboard shield that hid the entire body except for two small elliptical holes that allowed the observer to see only the eyes of the person behind the shield. The hidden person, which in this particular experiment was myself, blackened the immediate skin around the eyes so that the only visible features to the observer were the eyeballs themselves. As such, the only physical variations the tested observer was capable of seeing were with respect to the amount the eyes were open (i.e., the distance between the upper and lower lids), variations in pupil size, any vibratory movement of the eyes, and any in-out movement ("bugging") of the eyes. The shield itself was painted a light blue color.

During the experiment each subject was exposed to three different emotional states of the person behind the shield. The object was to correctly identify each of the different states by observing only the eyes of the person behind the shield. The procedure was as follows: Each subject would stand directly in front of the shield at a set distance of two feet from the shield surface. The subject began each of the three trials by closing his/her eyes and awaiting a signal from a nearby research assistant to open them. In turn the assistant was watching the closed eyes of the person behind the shield. When the shielded person's eyes opened, it was the cue to the assistant that the emotion being tested for was being projected upon the test subject. Once the subject opened his/her eyes, direct eye-to-eye contact was maintained with the shielded individual for a period of 15 seconds, timed by the research assistant. At the end of 15 seconds the subject was asked by the assistant to close his/her eyes. They then opened their eyes whenever they were ready and selected an answer on their data sheet. This procedure was repeated three times in succession.

The data sheet consisted of three pages, one for each of the three trials. Each sheet listed three different emotions followed by two more categories labeled "different feeling" and "no feeling." After each 15-second trial the subject marked one of the five choices on its respective page of the data sheet. Initially each subject had been advised that there was the possibility on any trial that no emotion would be communicated by the person behind the shield and they should then mark the category, "no feeling." Also they were told that there was the possibility that an emotion different from any of the ones listed might be communicated, and, if so, they should mark the category "different feeling." If they chose "different feeling," they were then to write down the specific emotion they felt.

In Trial I the emotion I was attempting to communicate was one of anger. This sentiment was directed towards each student: that is, I became angry at each student. Similarly, in Trial II the emotion I attempted to convey was sadness. In Trial III it was disgust.

Results

This experiment was conducted on a sample of 108 college students. All of the students were members of one of several anthropology classes being offered at the time of the experiment. All of the students were not voluntary subjects inasmuch as one class was required to participate in the experiment as part of the course assignment.

The tabulated results for each of the three trials are shown in Tables 1, 2, and 3. In each table the emotion being tested for is the first emotion listed. Thus, for example, in Table 1 "anger-rage" was the response sought as that was the emotion being projected onto the subject by the person behind the shield.

The "Total" column in each table lists the distribution of responses by percentages among the five possible choices. The figures in parentheses are the actual number of responses per subjects involved. In a few cases the emotions listed under the category "different feelings" were felt sufficiently close enough to one of the listed emotions that they were included under other choices. For example, in Table 1 several "different feeling" responses were included under the "anger-rage" category where the subject had indicated that he felt the person behind the shield was "mad."

All of the other columns in each table group the responses according to sex, age groups, and whether or not the subject was wearing glasses (to include contact lenses) during the experiment. As in the "Total" column, these columns contain the distribution of responses by percentages over the five possible choices with the actual number of responses per numbers involved contained in parentheses.

Results: Eye Contact + Psi = Thought Communication

The overall results of this experiment seem to clearly point to the fact that, limited to only direct eye-to-eye contact, a significant number of subjects were able to detect the emotions being projected by the person behind the shield. The highest percentage of correct responses is found in Table 2 where 49.1% of the subjects correctly selected "sadness-grief." Even in Table 3 where "disgust-yukky" did not receive the highest response, the response given is certainly above the random chance boundary. As such, it would appear from this experiment that it is possible for an individual to correctly detect the emotional state of another individual when restricted to direct eye-to-eye contact. That is, the eyes themselves are capable of directly communicating different emotional states to another individual.

The results for "disgust-yukky" indicated in Table 3 do complicate the results to some degree. These results in no way oppose the notion of ability to communicate emotions but rather beg the question of why was "pain-torment" so frequently marked when the person behind the shield was attempting to project "disgust-yukky." One explanatory hypothesis might be that the emotion of disgust overlies or has some of the same phenomenological characteristics as does the emotion of pain. That is, a person who is extremely disgusted may also experience pain at being in such a state. For example, we often speak of despair or sorrow as being painful.

Also in the initial phases of the development of this experiment a large overlap was noted between the responses to such emotions as surprise, amazement, astonishment, bewilderment; or sadness, depression, sorrow, hopelessness, etc. This appears not to be particularly a problem of over-

(cont. on p. 225)

Table 1. Results of first trial. Sender was projecting anger.

EMOTIONS	TOTAL	MALE	FEMALE	16-19	20-23	24-27	28+	GLASSES	NO GLASSES
anger-rage	44.4% (48/108)	37.7% (23/61)	53.1% (25/47)	36.3% (8/22)	44.4% (20/45)	44.0% (11/25)	56.3% (9/16)	47.0% (20/43)	43.0% (28/65)
joy-happiness	5.5% (6/108)	6.6% (4/61)	4.2% (2/47)	9.0% (2/22)	4.4% (2/45)	4.0% (1/25)	6.3% (1/16)	2.3% (1/43)	8.0% (5/65)
guilt-shame	14.8% (16/108)	16.3% (10/61)	12.7% (6/47)	13.6% (3/22)	17.7% (8/45)	16.0% (4/25)	6.3% (1/16)	7.0% (3/43)	20.0% (13/65)
different feeling	17.5% (19/108)	18.0% (11/61)	17.0% (8/47)	13.6% (3/22)	17.7% (8/45)	24.0% (6/25)	12.5% (2/16)	21.0% (9/43)	15.4% (10/65)
no feeling	17.5% (19/108)	21.3% (13/61)	12.7% (6/47)	27.2% (6/22)	15.5% (7/45)	12.0% (3/25)	18.8% (3/16)	23.0% (10/43)	14.0% (9/65)

Table 2. Results of second trial. Sender was projecting sadness.

EMOTIONS	TOTAL	MALE	FEMALE	16-19	20-23	24-27	28+	GLASSES	NO GLASSES
sadness-grief	49. 1%	36. 1%	66. 0%	50. 0%	53. 3%	36. 0%	50. 0%	60. 5%	41. 5%
	(53/108)	(22/61)	(31/47)	(11/22)	(24/45)	(9/25)	(8/16)	(26/43)	(27/65)
fear-terror	12. 0%	16. 4%	6. 4%	9. 1%	8. 9%	20. 0%	12. 5%	7. 0%	15. 4%
	(13/108)	(10/61)	(3/47)	(2/22)	(4/45)	(5/25)	(2/16)	(3/43)	(10/65)
guilt-shame	5. 6%	5. 0%	6. 4%	4. 5%	8. 9%	4. 0%	0%	4. 7%	6. 2%
	(6/108)	(3/61)	(3/47)	(1/22)	(4/45)	(1/25)	(0/16)	(2/43)	(4/65)
different feeling	28. 7%	36. 1%	19. 1%	31. 8%	24. 4%	36. 0%	31. 3%	18. 6%	35. 4%
	(31/108)	(22/61)	(9/47)	(7/22)	(11/45)	(9/25)	(5/16)	(8/43)	(23/65)
no feeling	4. 6%	6. 6%	2. 1%	4. 5%	4. 4%	4. 0%	6. 3%	9. 3%	1. 5%
	(5/108)	(4/61)	(1/47)	(1/22)	(2/45)	(1/45)	(1/16)	(4/43)	(1/65)

Table 3. Results of third trial. Sender was projecting disgust.

EMOTIONS	TOTAL	MALE	FEMALE	16-19	20-23	24-27	28+	GLASSES	NO GLASSES
disgust-yukky	38.0%	36.1%	40.4%	40.9%	44.4%	36.0%	18.8%	37.2%	38.4%
	(41/108)	(22/61)	(19/47)	(9/22)	(20/45)	(9/25)	(3/16)	(16/43)	(25/65)
surprise-amazement	4.6%	4.9%	4.3%	4.5%	2.2%	4.0%	0.0%	7.0%	3.1%
	(5/108)	(3/61)	(2/47)	(1/22)	(1/45)	(1/25)	(0/16)	(3/43)	(2/65)
pain-torment	46.3%	45.9%	46.8%	36.4%	48.8%	48.0%	62.5%	41.8%	49.2%
	(50/108)	(28/61)	(22/47)	(8/22)	(22/45)	(12/25)	(10/16)	(18/43)	(32/65)
different feeling	9.3%	11.5%	6.4%	13.6%	2.2%	12.0%	18.8%	9.3%	9.2%
	(10/108)	(7/61)	(3/47)	(3/22)	(1/45)	(3/25)	(3/16)	(4/43)	(6/65)
no feeling	1.9%	1.6%	2.1%	4.5%	2.2%	0.0%	0.0%	4.7%	0.0%
	(2/108)	(1/61)	(1/47)	(1/22)	(1/45)	(0/25)	(0/16)	(2/43)	(0/65)

lapping experiences (e.g., pain and disgust), but more related to our own cultural taxonomy of different emotions experienced. In this case we are more than likely not dealing with different specific emotions, but rather different intensities of and/or different environments for specific emotions. For example, the difference between sadness and sorrow is probably more a difference in degree than in kind. Therefore, given a certain amount of uncertainty in the subject, a choice of "pain-torment" for "disgust-yukky" may simply involve an overlap in emotional experiences and a shift in taxonomy.

Besides these possibilities there seems to be an additional variable operating that is related to the directedness of the emotion being projected. For example, there are two possible ways of directing disgust. The person behind the shield could either be disgusted at the subject or disgusted at something else (e.g., war in Vietnam, inflation, etc.) in the presence of the subject. It was this latter type of disgust that was projected during this experiment to each subject. As such, it is quite possible that from the subject's perspective what was most detectable was the personal discomfort, labeled "pain," of the person behind the shield at being in a state of disgust. (For the "anger-rage" test the anger was projected directly upon the subject and the results were slightly higher.) There are, however, no data on hand yet to confirm this hypothesis.

With respect to the subgroupings the only clear trend appears to be that females consistently scored higher than males. A corollary to this is that males more often marked the "no feeling" choice than did females. This might be expected given the greater degree of freedom in this culture for women to openly express their emotions such as crying, etc. The implication here would be that women, because of this freedom, have developed a greater degree of vertical vision. In fact, we often speak of women as being more "sensitive" than men in this culture. It is interesting to note along these lines that Exline (1972: 202) documented the fact that among young adults the females were much more visually interactive than males. Although this aspect of testing is interesting, other trials indicate this finding was an artifact in this particular group of trials (Lyon 1975).

The methodology used in this experiment was not the first of its kind, but was the result of exploring several different testing methods over the past two years. At this point there appear to be two variables that are almost impossible to control. One is the ability of the person behind the shield to consistently and intensely project a particular emotional state for 15 seconds on call. This is complicated even more so by the fact that this person must also refrain from any vocalization, since it would give the observer strong cues in addition to whatever subtle cues are being obtained from the direct eye contact. One can only hypothesize that these factors limit the effectiveness of the results.

A second variable is with respect to the degree of vertical vision or sensitivity that has been developed by the subject. In this particular experiment I think it can be fairly hypothesized that the results would have been better had all of the subjects been volunteers. It was obvious that some students (from the class that was required to participate) did not want to do the experiment and this no doubt affected their sensitivity and, in turn, the results. In addition, other subjects had personal difficulty getting over their own discomfort at having two blackened eyes stare out at them from behind two holes in the shield. Such factors as these probably also tended to lower the expected results.

Conclusions

At this point there appears to be two major explanations for the results obtained. The more rational, and therefore more acceptable, explanation would be in terms of our ability to associate the projected emotions with certain visual cues seen during the experiment. If this is the case the visual cues themselves must be extremely subtle and possibly operate on a completely subliminal level since no one can explicitly describe the visual differences between sad eyes versus angry eyes versus painful eyes versus happy eyes, etc. This would also indicate that body language operates on a much more subtle level than previously recognized by most researchers. One method for testing this hypothesis would be for the person behind the shield to consciously alter the physical variables. For example, test a group with a squint-eyed versus a wide-eyed projection of anger.

A second, seemingly less rational, explanation is that emotions involve some form of actual transmission between the eyes during direct eye contact. This explanation would, however, readily explain the sensation of increased intensity during mutual gazes. Also, this model is not without precedent. Freud, for example, felt that the libido was something that actually existed. That contention became a conviction with his student Wilhelm Reich, who felt it was the movement through the body of what he called "orgone energy." According to Reich (1942) what we call emotion is actually the different flow patterns of orgone energy through different parts of the human body. (Recently among psychologists, parapsychologists, and sociologists there has been a renewed interest in Reich's works.)

One method for testing the hypothesis for an actual energy flow or transmission between two individuals is now underway. In this experiment the subjects are subjected first to an 8mm filmed version of a person behind the shield and then the same subjects are exposed to the same experiment in a live situation. The assumption is that if an actual transmission is occurring it will not occur during the filmed version. Thus, the results from the live experiment should be significantly different from those obtained from viewing the film.

The transmission theory if validated would be particularly attractive to psi researchers as it would help explain many of the phenomena now observed. Certainly the "evil-eye" myths with their recurring theme of a force that emanates from the eye would begin to appear to have a factual basis. In the same manner it might also help clarify the psi phenomenon of psychokinesis.

In addition it would provide a basis for such common sayings as, "He was so angry he saw red." Since seeing red is an experiential phenomenon that many claim to have had, it could be somewhat explained as the flow of a highly concentrated (or "intense") amount of "orgone energy" which in the particular wavelength (or whatever form the energy transmission takes) of anger would cause things in the visual field to appear red.

Finally, there is the thought-provoking statement from literature, "The eyes are the window to the soul." This brings us back to one of our original questions: "What do small children really see when they stare?" Do the non-socialized eyes of children "see" anger, sadness, etc. within the being of other individuals? If so, this would help explain their often, seemingly unfounded, outbursts of crying.

At this point both of the above suggested models of explanation need testing. I would contend that the model based on external visual cues alone appears to be weakening as more testing is done. However, if some form of transmission model is to hold, eventually someone has to come up with an apparatus capable of detecting these hypothetical signals--an orgone energy voltmeter so to speak. However, regardless of the validity of either of these models it does appear that we have demonstrated here a sophisticated ability to detect specific emotional states during direct eye-to-eye contact. Furthermore, I would contend that this phenomenon is in some way directly related to psi phenomena. The exact nature of this relationship as well as the modus operandi of eye-to-eye contact still remain to be clarified.

* * *

Editor's Conclusion

Lyon has, with a rather simple classroom experiment, given us added insight on two seemingly divergent fields of anthropology: cognitive or psychological anthropology, and physical anthropology. In doing so, he shows the inextricable mesh between mind and body, thereby reaffirming a principle which has increasingly been emphasized in science and medicine for the past 20 years--since Selye's (1956) pioneering work on psycho-physiological stress.

Lyon (1975) notes: "In the fetus the neural ectoderm which gives rise to the brain also gives rise to the eyes and, as such, the eyes may well have a special proximity to consciousness not afforded any other external organs of the body." Ornstein (1972) has shown that human cerebral hemispheres have two general functions: the right-sided one relates to intuition and artistic ability, the left one to mathematics and analysis (or "science"). Of course, single individuals, particularly geniuses, tend to have relatively greater abilities in one or the other of these two general areas. Hence, we may expect, as some psychological studies have already suggested, that gifted psychics may have mental processes which greatly emphasize right hemisphere functions. Parapsychological work indicates that great psychical ability may be limited to but a few individuals, and it is of some interest that many of the most gifted developed their abilities following severe blows to the skull: did partial destruction of left hemisphere structures allow a right hemisphere take-over? Does psi then function only for a few and therefore have significance only to abnormal psychology? Greist's chapter on psi and language and this one on psi and seeing suggest not. And Reed's chapter, reflecting the sorts of experiences found in "the new consciousness" (yoga, transcendental meditation, mind control, biofeedback, encounter therapy), shows that a degree of psi operation seldom found in most of us during conventional ESP tests may in fact be commonplace in more relaxed settings.

Those who have studied the occult sciences have for years postulated that the pineal gland, or "third eye," in the center of the brain for us but actually functional in some primitive animals, is the "point of focus" in "seeing" of Castaneda's type of cognitive process. As Lyon's studies proceed, and deal more with volunteering subjects rather than captive students, it appears more and more that this form of "eyeballing" may indeed involve only a concentration on visual images, and thus be more common with the eyes open. Lyon has proposed to repeat the present study with eyes of the projecting individual dilated, to remove all possibility of signals originating from changes in pupil size. If results remain the same, it may be possible to set up an experiment in which it appears that the subject, at a distance, has his eyes open, when in fact they are closed. If results are still the same, then it will suggest that eye-psi is a process similar to kinesics (body language) only in that there is a casual but direct system of interaction taking place.

If the surface of the eye, as a derivative of neural ectoderm of the brain tissue, can still be psi-functional when the eye is sight-functionally blind, it may lead to understanding and practical applications of far greater importance than that which paranthropological research presently suggests. Both Liaros (1975) and Moss (1972) have had moderate success in developing psi in blind persons for purposes of navigation. If research from other fields such as physical anthropology indicates that there is after all a perfectly logical explanation for the super-sensitiveness of the blind, then engineers and other "scientists of the practical" will soon begin to develop procedures for magnifying the psi mechanism specifically for the purpose of allowing the blind to see.

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THE EVOLUTION OF PSI: ASPECTS AND PROSPECTS

Joseph K. Long

Preliminary Comments

In 1973 I presented a paper which included a section on "The Phylogenetic History of Psi." Physical anthropologists were either conspicuously absent from that august occasion or I have been kept unaware of any researchers who accepted its challenge. In the intervening period parapsychologists have added little to the data on this subject. In those respects I can add little to my previous speculative comments. But we are graced with some new indirect information which appears to be relevant.

Greist and Reed (above) have argued that psi does have a deep-seated and presumptively primitive place within the human psyche. The "primitive mind" must have been at least as amenable to psi as modern peoples are during rituals which must resemble or duplicate those of earlier cultures. Schwarz' and Lyon's reports in this section have demonstrated that psi seems to have no natural boundaries within the human species or even within the primates generally which would separate humanoid from non-human psi. The work of Eisenbud above and that on primitive cultures below suggest that psi relates to the interplay of psychological and physiological dynamics which may well have had their origins with the beginnings of aggression (which is to say the beginnings of biological and sexual competition among primitive animals). Lastly, we must accept the probability that psi has a long phylogenetic development because every other known human attribute has such a history.

* * *

When an anthropologist deals with the evolution of a presumably physical trait or capacity he would prefer for it to be a well-defined trait, even a discrete one, with known genetic associations. One gene = one trait. Psi unfortunately cannot claim any of these characteristics. There is little objective difference between PK and telepathy (see Walker, above, regarding the probable brain synapse mechanism for telepathy), and yet in examining poltergeist phenomena it would seem that PK alone may represent several completely different phenomena. Parapsychologists have for years been interested in apparent familial tendencies for psi, but the hereditary component to this is probably spurious. The progeny of gifted sensitives would of course prefer to think that they have inherited part of this capacity, but possibly whatever is present is due more to willful manipulation than anything in the genes.

The only direct evidence in support of genetic predisposition comes from Aristide Esser's (1969: 11-12) work not with persons who are known sensitives but with identical twins who, incidentally, happened to exhibit simultaneous psi under laboratory conditions. This shows that identical twins get synchronized changes in alpha brain waves during stimulation of one individual by projected slides when the two individuals are placed in different rooms of the research hospital. But others who are emotionally close but without genetic bonds, such as husband and wife, demonstrate similar phenomena, and blood volume (plethysmographic) studies comparing identical and fraternal twins with non-relatives give inconsistent results (Esser, Etter, and Chamberland 1967).

Our genetic information about psi is therefore highly incomplete. But physical anthropologists have not limited their research to discrete traits or traits with known genetic relationships, nor do the discrete traits so beloved by them necessarily always have the one-to-one relationship with discrete single-locus genes as is sometimes supposed (Laughlin 1959: 90; Long 1967). One of the standard subracial types still recognized by some anthropologists and archeologists is based almost entirely on a cultural trait (Long 1966). Hence, the nature of psi is no more elusive than many other problems with which physical anthropologists must deal on an everyday basis.

Physical anthropologists stand in an enviable position relative to the ability to study psi phylogenetically. With their depth of background in biological evolution, human genetics, and human speciation of the past 10 million years, they have a unique capacity to make judgments regarding relative degrees of evolvement, especially that of humans, over relatively short periods of the earth's history. But the deciphering of the nature of psi evolution is complicated because the alternative possible bio-psychological interrelationships far exceed the relevant data which presently exist.

Freud considered psi to be atavistic, whereas neuropsychiatrist Donald Pritchley considers psi to be on the increase (Krippner, personal communication, 1973), possibly representing a selective advantage in a stress-filled world. My survey in the concluding chapter indicates that psi may actually be rarer in the primitive world where such stress does not have sufficient time depth to be cause for any genetic change. But both views may be correct to a degree.

Psi as it affects lower life forms has been extensively demonstrated (also see Schwarz, above). In relating this to the plant kingdom we find that some students have an erroneous tendency to think in a general way that plants are by definition simpler than animals and that all plants are at relatively the same evolutionary level. Thus, psi work on plants (see Rhine and Pratt 1957: 117-18; Tompkins and Bird 1973; Vasse 1950) has tended to lump all of them together and to focus on the easily studied house or domesticated plants, or on spore germination and growth of bacterial cultures. This leads to the impression that plants are susceptible to psi, in the first place, and are in fact more susceptible than animals, in the second. Although the plant psi work shows much promise, we must recognize that most such research has no way of excluding effects from the experimenter's ESP or PK, and that interpretations about the meaning of plant psi, especially relative to human ritual and religious behavior, remains purely speculative at this point.

Among animals, psi is most easily demonstrated with the one-celled paramecium (Rhine and Pratt 1957: 117; Richmond 1952). But because paramecia are microscopic it is easy to suppose that such results are from the experimenter's own PK effect on the organisms. The manifold problems of this and similar effects are discussed elsewhere (Bechterev 1949; Osis 1952; Rhine 1951; Rhine and Pratt 1957: 85, 111-13; Sinnott 1950).

Mammalian testing is insufficient for generalization, although extensive testing has been done on rodents and other domesticated animals (for a summary see Morris 1976: 225-46), and the most convincing accounts of these understandably come from spontaneous psi among domesticated animals--cases such as Schwarz provides above. The cases of dogs' or cats' walking hundreds of miles over unfamiliar terrain, reaching their owners in heavily populated metropolitan areas after many months from the times when they were last seen in their original neighborhoods, are especially interesting phylogenetically. The evidence has led to the suggestion that psi may account for the migration of birds. An alternative explanation holds that birds "calculate" using supersensitive perceptions about the earth's magnetism, Coriolis force, and heat differentials. Deevey (1960) has provided a satisfactory explanation for the suicidal migration of lemmings as a function of periodic hypoglycemia (hypoadrenocortism), but this does not solve the problem (see Matthews 1955) of directional navigation. Hence the clairvoyance explanation is still the more plausible for bird migration and similar well known but unexplained biological phenomena, since clairvoyance in simpler tasks has been demonstrated for warm-blooded animals, whereas the more complex abilities have not been.

An important point in the cases of spontaneous psi in non-human animals is that these rare cases (excluding group phenomena such as bird migration) sometimes appear to represent perfect telepathy, a condition which is exceedingly rare or absent in humans. A cat with this facility is being studied at the Psychical Research Foundation. A dog observed in a shamanistic context may have had the facility (Long 1973). Castaneda (1968) reports an interesting example of human-animal psi mediated by psychotomimetics.

To summarize the observations about psi in mammals and birds, we may say that there seems to be a general ability among them, but that this ability, except for group behavior, is not observable generally. Thus one usually must test for it to discover it. When it is accidentally discovered it appears to be abnormally amplified in single individuals. This is similar to the statement one would make in summarizing the occurrence of psi among humans. In fact, as Morris (1976: 237) has put it:

> Studies involving animals as subjects appear to be more consistent than studies involving humans, both in proportion of overall studies that yield results and in proportion of follow-up studies yielding results similar to the initial study ... perhaps ... because there is less distraction, less noise in their psychobiological systems.

But this could lead to premature assumptions that psi is equally prevalent and identically operationalized among all warm-blooded species. If that is true, then we must still face the manifold problems of why it is so, for there are many reasons why we should expect to find interspecies differences in psi abilities.

For example, psi obviously confers a selective advantage in some situations and a disadvantage in others. Presumably some species, especially those whose survival is dependent on predation, could develop intense psi by the principles of natural selection. This is reminiscent of the instances of meta-language, as between impalas and baboons (while being stalked by big cats) occasionally observed in primate studies (Washburn and DeVore 1961; also see Heider 1970: 20-21 and Long 1967a: 36 regarding the DeVore-Washburn film, Baboon Ecology). Do these cases represent sensory cues or extrasensory ones? May a case such as this represent synergistic control of psychical cues resulting from symbiotic genetic development among species which are in some ways in competition? And where might the predator fit? Certainly, if he were communicating telepathically with the animals on which he preyed, this could seal his own species' demise. Similar problems might arise in humans with perfect telepathy. The suggestion has often arisen that mental disorders may arise when psi peaks for long periods. (Psi has been observed to peak in some patients immediately prior to the onset of schizophrenic psychosis.)

Looking at it in another way, in all the psychical research which has been done, there is no clear evidence that psi ability is an inherited characteristic, nor, certainly, how many genes, or their loci, such inheritance might involve (indirect evidence from some psychics indicates transmission, but all of this could be accounted for by child-rearing patterns, cultural traits, etc.). Thus, we as anthropologists are confronted by two important considerations: (1) presently nothing suggests that psi is inherited (which is to say, psi may be irrelevant to the total phylogenetic picture, and vice versa), and (2) this would seem to represent a crucial research problem, since its solution will undoubtedly have vast implications for our knowledge of human evolution (and evolution generally).

We should allude briefly here to the vast area of sleep-and-dream studies, and how these relate to parapsychology and evolution. Although it would be premature to attempt construction of an evolutionistic theory of psi based on dream phenomena, certainly a basic outline may soon emerge. Krippner, Honorton, and Ullman (1972) have demonstrated GESP, including precognition, in the dream laboratory at Maimonides Medical Center in Brooklyn. Van de Castle (1971) summarizes such studies in context of other dream work, such as REM (rapid eye movement) and EEG (electroencephalogram) studies.

A number of animals besides man are characterized by REM dream periods, but we have no direct evidence yet that the REM periods imply psi. If and when such a discovery is made, it should provide some evidence as to the evolution of psi, if indeed psi is something that evolves (whether strengthening or lessening). Grof (1972a, 1972b) believes that he may eventually be able to identify peak psi experiences during LSD therapy, by EEG patterns. If so, then similar variations may soon follow in the dream work at Maimonides and the University of Virginia Medical School's Sleep and Dream Laboratory. This also should provide a tool for the direct study of the phylogenesis of psi.

As a demonstration of the potential importance of animal psi for physical anthropology, and at the same time a possible explanation for why physical anthropologists have avoided studying this aspect, Lamarkianism must briefly be mentioned. If PK operates in a general way, or even occasionally, at the cellular level, then it could cause mutations--or Lamarkian inheritance of acquired characteristics! Although I personally find the concept of Lamarkianism difficult to digest (since it would negate the basic premises on which some of my own laborious research was based during the early 1960's), its possibilities have increasingly been raised (Koestler 1971), perhaps in response to the "Marxian research" being conducted in Russia.

Walker's quantum theories of consciousness, will, and neuronal information-transfer, as he explains them in his chapter above, could conceivably explain the occasional observations of seemingly Lamarkian modes of inheritance, particularly when these are brain-related functions. This would be difficult to test, even with twin studies, since psi's independence from time and space (see, e. g., Sherman and Wilkins 1951/1973) would make results independent of separation of sibling from sibling and offspring from parents; that is, if the "imprint" were present at conception, its potential would be undiminished by time and space.

Now, having offended my biologist and anthropologist colleagues by a brief foray into Lamarkian inheritance, I would suggest that the effect of psi research in physical anthropology is bound to have an upsetting influence on our concepts of biology and evolution. But again, this influence will be less profound than might be imagined. We know, for instance, that laboratory experiments on genetics almost always supports Mendelian predictions, and our recognition of the psi factor as an occasionally active one will not likely have much influence on either laboratory experiments or on inheritance in general. The adaptive aspects of evolution or the effects of natural selection will continue fairly regularly as they have in the past--only with our recognition that psi is a part of this adaptive process.

* * *

Concluding Comments

The three chapters in this section have presented considerable although tentative evidence that psi is present as a basic biological force. (We return to this theme as it relates to human survival in the last chapter.) Schwarz presents anecdotal evidence that there is occasional human-animal psi and concludes that at least a part of this seems to be pure psi on the part of the animals. Long cites the growing need for physical anthropological research specifically on the problem of the role of psi in biology generally and phylogenetic relationships (e. g., is there a dog-man synergy?) in particular. Simply because Lyon chose to do his pioneering work on sight-psi synergy, and the fact that this coincided with cognitive work which is well advanced on the effects of pupil size in communication, his area of primate ethology is likely to be the first relating to psi which will get widespread and serious attention. That is appropriate because it involves both the entire field of cognition (just as Greist's similar work above does) and the problem of communication. It is significant that all of this work also relates directly to the problem of adaptation, even though the research has not been designed to provide answers to that specific problem. This provides still further support for our contention that psi has developed, like every other human faculty, in response to adaptive needs, and therefore is different only in kind from other abilities such as walking, grasping, or solving mathematical problems.

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Part V

Paranormal Dimensions in Primitive Medicine

VERIFICATION OF PSI IN ETHNOGRAPHIC FIELDWORK

Joseph K. Long

Preliminary Comments

Margaret Mead has stated in her chapter in Part I that our examining of psi phenomena in anthropology should not be contingent on whether we believe in it or not, but she, Bharati, and Eisenbud would certainly all agree that whether these events as we report them ethnographically represent a concrete reality or not is essential. The concept that something is a separate reality, or a reality but on "a different experiential plane," precludes the possibility for research by scientists who are part of a real world. Likewise, as noted in a previous article, the idea, that whether the abilities of persons studied in a given society are psychical or not makes no difference, can only lead to slipshod fieldwork (Long 1976). But the anthropologists who have observed psi in the field are frequently disquieted by it, and they are sometimes led to question their own powers of observation. This is quite apparent from the published accounts of such encounters (and most such accounts are not ever published).

One objection that anthropologists raise regarding the validity of our tying to make lucid observations about psi is that ethnological work is still methodologically weak. This is a point with which I must agree. Ethnology is largely ideographic, utilizing few rigid experimental controls but rather small, non-random samples, whereas parapsychology has become quite nomothetic since Rhine's work in the 1930s, so that it is developing ever more sophisticated controls and random sampling procedures. Therefore, the anthropological reports on psi are likely to be highly anecdotal and therefore unacceptable to the parapsychologist. Few parapsychologists know much about anthropology or its field methodology, and there is already some evidence that anthropologists' work on psi has been accepted or rejected by parapsychologists not on the basis of its relevance to psi studies but rather on the basis of their lack of understanding about what the anthropologist is saying. Hence, if Thomas Fraser (1963) outlines Thai beliefs in spiritualism, parapsychologists may assume that he is reporting his direct observations in support of mediumship. If, on the other hand, Sol Kimball states unequivocally that he observed (to his great surprise) a clear apparition three feet away on the street of a town in Ireland in the middle of the night (Kimball and Watson 1972: 189-92), the parapsychologist, unfamiliar with Kimball's prior work and the fact that he has absolutely no interest in psychic phenomena aside from this manifestation, may tend to dismiss the account as being the anthropologist's metaphorical way of discussing culture theories. Both suppositions would be exactly opposite to the truth.

This is a problem to which there is no easy solution. Anthropological observation will always include major segments not amenable to quantification or statistical analysis. As indicated in the immediately preceding chapter, there is certainly evidence to support the logic saying that primitive peoples ought to have more psi or exhibit more psi than those of modern societies. Therefore, it is highly dubious whether we ought to intensively study peoples' psi to the possible exclusion of other potentially more culturally relevant data. But how difficult is it to study psi in ethnographic fieldwork?

Here following, I try to show that our reticence to study psi is due more to our personal confusion about the subject itself than to an actual inability or lack of time to verify the observations. Verification techniques in anthropology are highly evolved and in some ways are more impressive than statistical "proofs" (see Honigmann 1971). These techniques, combined with those (some quite recent) developed in parapsychology, should give us a handle on psi phenomena observed in fieldwork, with a minimum of extra research on psi as a "special" area of investigation.

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Introduction

Anthropologists have frequently shown that, by the use of special fieldwork methods, solid ethnographic work is often a keener tool than the most elegant of statistical analyses. That is not quite true. In most cases of ethnographic competition with statistics and questionnaires, in getting at "the truth," the statistical weakness is to be found in the fact that the wrong questions were asked and they were answered incorrectly because of the manner in which they were asked. Tally's Corner, Elliot Liebow's recent study of a black ghetto neighborhood, demonstrates this admirably.

It is possible to show statistically that ghetto blacks are irresponsible and therefore do not take available jobs when they can. But Liebow has shown ethnographically that if blacks did take these jobs they are turning down they would actually be economically worse off than they already are.

One way anthropologists have sharpened their analyses is by recognizing dichotomous social-analytical categories: ideal versus real behavior patterns, manifest versus latent roles and functions, ascribed versus achieved status. This does not suggest that one part of the dichotomous pair is more important than the other but only that to understand behavior correctly we must know and make clear which side it is that we are discussing. A number of techniques may be used to distinguish the respective halves of each dichotomy, as enumerated below. Some of these are hardly stunning: if the West Virginia housewife tells the anthropologist that all people in the town of Scratchback are Godfearing and church-going but he finds himself alone with the minister during Sunday services, then he may assume that going to church is an example of ideal behavior. Sometimes people of a particular society, including our own, are totally blind to the fact that (for example) church-going is an ideal and not a real form of behavior.

Sometimes behavioral scientists are confused in the same way, or think that the distinction makes no difference. Jensen (1963: 230), speaking of psychical healing and the use of psychical powers in shamanism, says that "there can be no doubt that man actually possesses such abilities," but whether, in any given case, the ability is psychical or simply due to suggestion "does not matter very much." He goes on to make the familiar suggestion that, for purposes of magic, primitive peoples cannot distinguish between fact and trickery (Jensen 1963: 230-31; 234-35).

Hence, the people you're studying can't distinguish between fact and fiction--the anthropologist apparently can't either--but it doesn't make any difference anyway because the analysis doesn't depend on the fact... Jensen is talking mainly about mythology, and in all fairness we must grant that myths are special cases (at least in terms of our own semantics), as indicated by the axiom, "the myth is greater than the reality, it is the highest reality." But whether we are speaking of myth or of social organization, the mixing of fact and fiction, reality and myth, is just not good anthropology, either at the research end or at the theoretical-analytical end which follows.

Erasmus (1961: 12ff.) has, in a diametrically contrasting model, suggested operations through which prestige motivates and reinforces behavior, being especially powerful in culture change processes. Much of the psi observed by anthropologists probably represents a distortion of normal and shamanistic activities for the adaptive purpose of soliciting attention and maintaining social status. Likewise, as emphasized in the concluding chapter, Part VII, psi, like most behavior, is largely adaptive, and is thus as ecologically important as most other behavior.

In sum, it is important for anthropologists who observe and study psi to be able to verify what it is they are looking at. Regardless of what particular approaches may appeal to the individual anthropologist, it should be made clear that competent fieldwork in parapsychological anthropology can be done according to any of the standards presently set for hypothesis testing and validation in anthropology. Some verification techniques which may be useful are outlined here.

Specific Verification Techniques

(1) Participatory replication. Participant observation is the standard or central technique applied in the anthropological laboratory (i.e., the field site). The precise procedures for this are outlined in any introductory textbook but, with a few notable exceptions (see especially Malinowski 1922; Linton 1927), participation has been substantially short of completeness. Actually, such rigors are not essential. Foster (1955) has participated in fire walking in Spain, although Pearce's (1971: 2-3, 104, 111) model and Beal's evidence (above) forces us to strongly question Foster's interpretations. But it was not until recently with the publication of Castaneda's (1968), Kensinger's (1973), Boshier's (1974), and Harner's (1968) work that we have seen any concerted efforts to participate in the paranormal world of field informants. It is frequently argued that such attempts only represent crude or psychedelically influenced existential impressions as ethereal. But the real problem is that anthropologists with no background in parapsychology prefer at times to discredit their own senses, even when they are cold sober. This has held for almost all fieldwork: Moody (personal communication 1967) apparently observed the paranormal when studying satanists in California, but his final report (1971) on this study emphasized only the neurotic predispositions

of participants. The new generation of students seems to be reversing this trend.

(2) Photography. This is a highly useful tool as it relates to psychokinesis, and its value has been established in several cases, especially in the case of motion pictures. The Duke Medical School films involving LaBarre's (1962: 39) work with snake handlers is one example, although not an entirely clear one. A clearer case is seen in the Maimonides Medical Center films by Ullman on psychokinesis by Russian psychic Nina Kulagina. Mishlove (1975: 163-171) cites a number of cases in which psychic Uri Geller and others have been photographed during psychokinetic events and shows that frame-by-frame analysis of the motion-picture film clearly established the reality of occurrences. The film Pomo Shaman (Heider 1970: 88-89) shows how filming may be used to suggest cross-cultural similarities in healing techniques, even if recorded events neither establish nor disprove psychokinesis.

(3) Thoughtography, or psychic photography. This technique involves the apparently psychokinetic creation of chemical changes in photographic emulsions, thereby creating actual pictures, and is classically demonstrated in The World of Ted Serios (Eisenbud 1967) and the video television films of Serios influencing a film (Eisenbud 1970). Other similar cases have occurred, the most anthropologically interesting being the Uphoffs' (1975). It is impossible to predict what results might be obtained trying this technique among primitive peoples, by utilizing polaroid film and requesting persons unfamiliar with normal photographs to create images on the emulsion. Perhaps in their naiveté, they would produce just those phenomena which we sophisticates "know" are quite impossible.

(4) Kirlian photography. This is sometimes described (see e.g., Long 1973) as a tool for measuring psychic healing, implying that the Kirlian phenomenon is psychical, or within Walker's model of quantum mechanics. Indeed, it is generally considered to be a form of psi within the framework of "consciousness psychology" (Moss 1974). Now I am increasingly convinced that this more likely falls under the general category of electrostatic phenomena as described above by Beal, because quantum psi (QP) types (such as PK or precognition) all are often best developed in single individuals: if a person possesses one QP ability he tends to also possess other types of QP. But I can find no evidence

of this for psychic healers studied by Kirlian photography. If interrelationships exist, they seem limited to the link with acupuncture (Worsley 1972). Nonetheless, within the cognitive framework (emic system) of anthropologists, effective non-psychotherapeutic healing of physical ailments by shamans and witchdoctors which would be considered para-normal may be found; therefore, it is appropriate to continue to include Kirlianism as a field tool until our knowledge of both it and psychical shamanistic healing becomes more sophisticated.

(5) Precognitive dream tests. Van de Castle (1971) has described several relatively simple one-night experiments whereby precognitive as well as other QP types of activity may be tested with or without utilization of statistical methods. The most impressive of these is that of Krippner, Honorton, and Ullman (1972). The principle, reduced to its essence, is to devise targets which are either clear hits or clear misses, and in which a hit so adamantly precludes the accidents of chance that statistical analysis is reduced to the status of an accessory. The precognitive tests are somewhat more amenable to this because they omit various sorts of subconscious or accidental tampering on the part of the experimenter.

(6) Twin studies. As physical anthropologists, in particular, know so well, identical twins show strikingly peculiar similarities of physiological processes, and psychologists have, of course, found the expected mental similarities. The work of physician Aristide Esser with electroencephalographs at Rockland State Hospital of Orangeburg, New York, indicates that brain wave correspondences in twins may open up new psi research opportunities for anthropologists lucky enough to find such twins (Esser et al. 1967; Esser 1969). Psychophysiological changes occur in one twin when the other, removed by some considerable distance, is stimulated by exposure to photographs with strong emotional content.

(7) Projective-GESP testing. Rose (1952, 1955, 1956) pioneered in efforts to demonstrate psi in Australian Aborigines utilizing the standard five-symbol Zener cards. While his results were provocative, they fell somewhat short of the rigorous statistical standards generally accepted in parapsychology. Foster's (1943) results among Indian school children were somewhat better, whereas Mason's (1974) extensive tests among Liberian school children were entirely nonsignificant statistically, in fact tending toward the reverse of expectations. Barnouw's (1946: 20) tests of a Chippewa

religious leader did not exceed chance. McElroy's (1955) tests of Aborigines in Arnhem Land were also inconclusive. Mason's observations about difficulties in utilizing such subjects in testing for GESP among primitive societies is instructive, suggesting that such attempts, done quickly and on a broad scale, may often prove to be self-defeating. Van de Castle (1970, 1971, 1974), being familiar with projective tests such as Rorschach and TAT so commonly used by anthropologists, conceived the possibility that primitive peoples --any peoples--might react more positively to culture-specific ESP cards. Accordingly, he divised such cards for the express purpose of testing Cuna Indians of the San Blas Islands off Panama. His results have been both statistically significant and enlightening regarding certain status differences such as age and sex; women score significantly higher, but it seems quite unclear whether this is purely a status/role difference of a psychological one, since Van de Castle, a male, was the tester. In either case, this approach seems promising. On the negative side, as parapsychologists have known for years, results of testing are highly dependent on the personality of the tester, and the precise psychological characteristics which are favorable in a tester have not been clearly defined. Thus, in some cases in which anthropologists have used the Zener cards (see, e.g., Barnouw 1946), results which are not significant may reflect the conditions more than the lack of ability. While this method, being one involving statistics, may be more acceptable to some anthropologists, those wishing to attempt such testing should first establish their own testing abilities within their own culture using the Zener cards.

(8) Special consensus. This term, coined or at least popularized by Castaneda (1968), has in fact been used from the beginning of anthropology because fieldworkers who are sufficiently sober, erudite, and sane are each considered to constitute a special "consensus of one" for validation of field observations. In its more specific and recent meaning special consensus may be interpreted to mean either: (a) general similarities of "visions" as experienced by the psychedelically intoxicated anthropologist and his similarly affected informant, or (b) specific correspondences of observations by two or more but not necessarily all individuals at a single location and time. It is the last meaning which I emphasize here. This phenomenon has often been dismissed under the term folie à deux, extended to mean mass telepathic hallucination (Pearce 1971: 118, 154). Eisenbud (1975: 121-25), with reference to UFOs, notes that "we are up against the

same insurmountable solipsistic argument as we are with normal experience, the argument in this case rendered somewhat more pointed by the very lack of consensual agreement...." This has been seen in innumerable UFO cases in which several persons see the same anomalies while several others see only the normal landscape. The clincher comes when gross physical changes in terrain follows such sightings (Hynek 1972: 150-51; Blum and Blum 1974: 122-23), and that is still further complicated by Eisenbud's rather profoundly disturbing concept of destructive PK, in his chapter in Part I.

It is precisely these solipsistic paradoxes identified and elaborated upon by Eisenbud which most profoundly confound the anthropologist, grounded as he is in a closed emic system of Newtonian realities. Even the physical concepts of Heisenberg and Walker involving the uncertainty principle and, therefore, the possibility of multiple and simultaneous physical realities are insufficient to precipitate a psychological mazeway resynthesis preparatory to confronting special consensus in its most profound ramifications. My own case is instructive. My 1970 files on fieldwork in Jamaica document a case in which several hundred persons witnessed a coffin on three wheels propelling itself up a hill through a market area. Three live vultures were perched on it, and an apparently dead arm was dangling out. A voice enquired as to the location of one Jim Brown. Although those present were terrified, they did display consensual agreement, thus validating the physical reality of this obviously impossible event. Because I was not among those privileged to be present, I have refrained from publishing this case. On the other hand, in those days prior to my knowledge of parapsychology, had I seen this event I should have considered having myself committed. How many others faced equally confounding dilemmas in confronting inexplicable shaking tents among Salteaux Indians (Hallowell 1942; Landes 1968) or PK among Siberians (Eliade 1966)?

(9) Informant reliability. Lowie, who was well known for his fieldwork among the Crow Indians and his important descriptions of Plains Indians' vision quests (Lowie 1935; 1954), has given (in Murphy 1972: 168-69) an excellent appraisal of ethnographic problems in dealing with reality of visions and psychical events. He notes that the truly keen fieldworker reaches a point when he can distinguish between subjective impressions and clear expositions, relying on four bits of data about the informant himself: One, the situation

is such that the informant has nothing to gain by misleading the anthropologist, so motivation for lying is absent (see, e. g., Long 1972: 19). Two, visions and the supernatural in general tend to be serious matters, and informants who are truthful about everyday matters are virtually bound to be truthful about the more serious ones. Three, the true visionary gains nothing by repeating the account of his vision, for it has already (by the time of the anthropologist's arrival) brought him to the pinnacle of his potential prestige, but the imposter-visionary has much to lose by giving such an account, since it will invariably lead to ridicule. And four, the relating of accounts of these types often brings severe restrictions (taboos), and thus people are motivated _not_ to relate _new_ accounts. Thus, the trained anthropologist, presumably, develops certain skills enabling him to distinguish fact from fiction. Although the tests described by Lowie may be weak compared with laboratory design, it seems improbable that a competent ethnologist would be any more misled by examination of psi than by other parts of his fieldwork. If these tests are inadequate for paranthropology, then they are equally inadequate for most other phases of anthropology.

Summary

A number of other verification techniques might be employed, of course, limited only by the expense, weight, and inconvenience of gadgetry (such as galvanic skin "lie detector" machines, Faraday cages, etc.) and the imagination of the researcher. But the main point to understand is that once anthropologists gain a general knowledge about the sorts of experiments being done by parapsychologists and of the ways in which psi is manifested both in the laboratory and in extreme cases such as "Geller effects" and the poltergeist, then the verification of paranormal ethnographic fact is usually no more difficult than any other anthropological verification. It is the usual anthropological detective work, pure and simple.

* * *

Concluding Comments

The brief outline of verification techniques presented here will not lead to an upsurge of fieldwork on psi among primitives--nor should it. Most of the observations quoted in my own concluding chapter in this book were made by sophisticated fieldworkers, and in spite of the intense interest on the part of some like Lowie and Hallowell, the total number of observations of psi is not great by comparison with those made in the past century within Western cultures. But we cannot stress too much the importance which data on psi may be expected to have on anthropological theory such as that relating to the evolution of religion and its impact on social change. As the next chapter suggests, we may expect psi data to have an equally important bearing on medical anthropology.

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SHAMANISM AND VOODOO DEATH: STRESS THEORY IN MEDICAL ANTHROPOLOGY

Joseph K. Long

Preliminary Comments

Any reader who has an interest in medicine and psychodynamics has realized by this point that we have had some highly important health related information already presented by the various authors. In a sense, all of the articles have related to medical anthropology in that they deal with a subtle communication of emotions. If one is inclined to discount the concept of soul survival, then in studying Gardner Murphy's (1961) classic work one is forced to assume that there is a vast psychic field or network operating constantly to link all living humans and their environment. Some describe this, or the eureka (!) awareness of it, as cosmic consciousness. That concept is too abstract for me-- I do not know what it implies metaphysically or epistemologically. But I do believe that there is a sufficient degree of continual information exchange occurring at the psychical level that it must have a direct relationship to health, at least within the sphere of psychosomatic medicine. This chapter suggests some spheres of ethnographic fieldwork in which we may be able to get some direct information regarding the psychological or medical effects of psi.

* * *

Introduction

In the past 100 years science has advanced enormously, leaving trails of thousands of well founded and thoroughly tested hypotheses to explain parts of the universe which seem to have the greatest importance to us in everyday life. The test of this is that we can control most of our physical environment using inventions predicated on and explained by those hypotheses. The assumption follows that we can "explain" everything, and indeed that assumption happens to be true. But "explaining" is not always indicative of knowledge or understanding.

The concept advanced here is that stress theory in medicine and psychiatry, although basically sound, stands to gain greater meaning and predictive value if the paranormal aspects of stress are considered. I submit that an alternative view of stress, based on the role of telepathic and psychokinetic factors as suggested by Eisenbud above, is in some cases (e.g., in the presence of the *susto*/*mal-ojo*/*empacho* syndrome folk medical systems as in Latin America or the shamanistic or witch doctoring systems of the Eskimos and Jamaicans) superior to the conventional one which tends to rationalize about the causes of every psychosomatic symptom.

The Concept of Stress

Unlike so many "self-evident" hypotheses, the stress theory of disease has been successfully tested: psychosocial stress leads to psychiatric and organic disorders. This is a powerful statement applicable to depression, stomach ulcers, coronary heart disease, virus-related respiratory disorders, cancer, and even automobile accidents. It stands to reason that disorders so clearly demonstrable should lead equally well to treatment based on allopathic medicine, which is, in a sense, the test of stress hypotheses. But such is not the case.

We know, for example, that if we become ill and go to a physician we will usually get well. However, what most people do not understand is that if we do not go to a physician, we still usually get well. More discouraging still, we will probably get well as quickly without the physician as with him as far as the average office visit is concerned.

I do not wish to attack stress theory. As a medical anthropologist and epidemiologist specializing in psychosomatic medicine, I depend on stress theory far more than concepts about psi. On the other hand, I am not completely comfortable with it, and I believe one must recognize that many stress explanations are conjectural--articles of faith, if you will. Stress explanations often do not really explain anything and are often not even well grounded in what we really know about stress. The concepts about the relationship of different forms of stress to arteriosclerosis and stomach ulcers have changed so often and so radically that most physicians at this moment are not aware of what is presently the clearest and most certain explanation of the dynamics behind these two diseases. Hence, the so-called "explanations" are psychological rationalizations which the scientist or physician conjures up in the presence of data which cannot be better explained by other conventional means.

Rationalizing explanations are not necessarily "bad" or "wrong," but we must not be confused into thinking: (1) that we really are explaining something, (2) that we understand the variables involved, or (3) that alternative and unconventional explanations would not apply.

Just as humans are inclined to rationalizations, so are they bent on reversals. Stress theories have existed for millenia, and once germ theory accompanied by vaccines and antibiotic weaponry emerged it encapsulated medical science and scientific reason. Hsu (1952) wisely observed that irrational devotion to Chinese religion and magic was so dominant that people would rather die in the horrible cholera epidemics than avoid disease by vaccination. That is, they were too dull to recognize that modern medicine prevented the disease.

Hsu later tempered his view when epidemiologists discovered that the vaccine which had been promoted had in fact no effect whatever on susceptibility to cholera or on the effects of cholera once it had been contracted (Paul 1955: 135). Hsu, by comparing similar aspects of scientific and magical concepts, demonstrated again the well-understood principle that cognition tends to reject dissonance, and hence provided an "explanation" of sorts for both science and magic. But he still supported his initial observation, of course, that people often depend on erroneous information in making their decisions (but, also, that anthropologists depend on similar information in their analyses of other people).

I have already discussed in the previous chapter Erasmus' (1961) well-founded and empirically established assertion that primitive and modern peoples alike do make frequency observations (i.e., statistical analyses). Whereas their analyses based on these observations are often less accurate than a modern computer and often involve faulty interpretations of facts, their behavior may not properly be described simply as belief in magic, irrational devotion, or mythical fantasies.

Primitive and Modern Medicine

Long's (1972, 1973) research in Jamaica dealt with another problem in medical choices: why people prefer witchdoctors to physicians. More oddly, why does witchcraft work better than penicillin in treating venereal disease? Why does an African form of acupuncture, combined with herbalism, work better than aspirin in treating work-related headaches and backaches? How can a witchdoctor instantly diagnose cases of heavy marijuana usage from 10 feet away? How can a Kumina sorcerer cause voodoo death while a medical doctor is in attendance?

For some of these kinds of questions the answers are relatively simple. People prefer witchdoctors for example because they are more sympathetic and their treatments are literally better, psycho-socially (Torrey 1972). Witchcraft works better than penicillin for venereal disease because venereal disease is pandemic, and the problem the patient faces is not to be cured (simply to be followed by reinfection) but to learn to live with the disease. The other questions are more difficult--impossible to answer, perhaps.

Hence we cannot explain all of these, parapsychologically. Nor may we disregard the great host of psychological, physiological, and bacterial factors involved in medical problems, including those above. Lastly, we should emphasize that if psi is present in a given medical case, then it is probably in interaction with other equally important factors of the more conventional types.

Although there is little support for the idea that psi is an atavism, there is good reason for anthropologists to expect a greater prevalence of psi among primitive peoples. Schmeidler and McConnell (1958) have shown that people generally score significantly above chance expectation in ESP tests if they believe in psi (non-believers usually score significantly below chance). Primitive people and some not so primitive, but of other cultures, usually believe in and sometimes depend on psi to a high degree. Therefore, they too will probably score better than chance, be reinforced by success, and eventually develop their psi powers very highly. As noted above in the chapter of psi evolution, this excellent logic has little empirical evidence to support it. But there is some. I worked with one witch doctor in Jamaica for months, at random intervals, before catching on to the fact that she always knew when I was coming. She and the helper who always prepared my place on those days made no point of it because they assumed that I just expected her to know this (Long 1973: 88-110). (Oddly enough, it now seems in retrospect, for she admitted that most of her cures were placebo effects or from the herbal remedies she prescribed, she thought that only a very few of the commonly reported "duppies," or ghosts, really existed except "in the mind," and she seldom ever made attempts to cure by paranormal means.)

The connection between helping or curing and paranormal abilities, especially divination, is fairly common in ethnographic accounts. Anthropologist Adrian Boshier (1974-76), director of the Museum of Science and Man in South Africa, has given many examples of how whites have taken problems of theft, etc., to Bantu sangomas (witch doctors, or shamans) who quickly solved the mysteries or at least located the stolen objects. Robert and Linda Sussman and Ralph Linton (A. Linton and Wagley 1971: 86-94) have observed this on Madagascar, as reported in the chapter which follows. Adrija Puharich (1959) has observed psi at work in the sacred mushroom ritual of the Yucatan. Black Elk and other Plains Indians used paranormal means as a survival measure in times of famine (Neihardt 1932). Carlos Castaneda (1968) utilized divination in Mexico, under the direction of a brujo (sorcerer), regarding books stolen in California. Actress Shirley MacLaine, an erudite amateur anthropologist, reports the same sort of telepathic "survival communication" in her book on Africa, and various other travelers and adventurers tell similar stories, many of them having almost identical features. When Boshier first worked with a sangoma the Bantu knew he was coming, what he wanted, and that he would not harm them.

Boshier tells an interesting story which supports concepts of the relationships between psi and medical or ecological adaptation. Famed psychic Uri Geller (Puharich 1974) was visiting him, so they went into the field to see some of the sangomas with whom Boshier had been working. Geller demonstrated his psychokinetic spoon bending to them, and they found it impressive. After Geller left, Boshier discussed his performance with the sangomas. Their question was, 'What does he do?" That is, 'What good is it, what healing can he do?" Boshier explained that he used it to repair watches. But time is not of the essence for sangomas. He explained that through these demonstrations scientists became convinced that psi was real. But that is not impressive; sangomas experience psi every day, and its apparentness obviates the need for proof and explanation.

The Role of Psi in Folk Medical Systems

The question of function or usefulness of psi may be tangential to our understanding of it. People often ask why we should worry about psi since it is so relatively unimportant. If Indian medicine is so strong, why did the White Man take America? Well, that is beside the point. The fundamentalist businessman who repudiates evolution could still be better off than many biology teachers. Evolution does not "help" people especially, but no scientist would question its validity.

We need not repeat the observations about the evolution of psi to understand that function is important for explaining psi in terms of anthropology and evolution. But psi clearly operates in special contexts, and these relate directly to adaptive needs. I submit that in many human societies these needs are most often related to health--that is, providing food and medical or psychiatric help.

Therefore, the most frequent anthropological evidence for psi comes in examining medical or divinatory practices. A vast literature (cited more fully by the Sussmans in their chapter, following) supports the fact that traditional practitioners are highly competent in treating disease which is obviously psychosomatic (Kiev 1972; Torrey 1972). Work on decision models suggests that if investigators shed their personal biases they would find witchcraft and other forms of folk medicine effective against the seemingly more organic disorders as well (Long 1973).

For example, I studied one witch doctor (a protégé of the woman described above, who could predict my visits to her) who consistently and correctly diagnosed a "disease" which I labeled the "forehead-axis syndrome" (Long 1973: 113-14). This diagnosis was accomplished by the witch doctor without the aid of any clues recognizable by physicians or the anthropologist. Patients suffering from the syndrome will, when visiting a physician in a public health clinic, vaguely describe and exhibit various disorders some of which are commonly associated with strenuous manual labor and which are subsequently diagnosed by physicians as osteoarthritis combined with non-specific migraine and nutritional deficiencies.

The treatment systems observed were in competition: modern medical clinics vied with centers for ritualized folk treatments (at "balmyards," where mixtures of herbs were prescribed for internal use or administered as a balm, externally), physicians vied with witch doctors, and thus the techniques and relative success of diagnoses were anthropologically and medically instructive (Long 1973: 73-133; 239-48). Only about half of the patients who would be diagnosed by physicians as having such an arthritic-migraine combination were diagnosed by witch doctors as having the forehead-axis syndrome (and then treated herbally, and usually relieved of their symptoms). Upon further questioning of patients (in the company of the witch doctor--this is a practice which five of the folk practitioners regularly allowed), I discovered the arthritic-migraine symptomatology in other patients not diagnosed by the witch doctor as being afflicted by the forehead-axis syndrome. But I failed to elicit the patients' confirmation of the typical forehead-axis syndrome (which seems to bear some resemblance to an acupuncture field syndrome) symptoms outlined by the witchdoctor: a pain entering the forehead, traveling down the back of the neck, through the ribs, into the abdomen, and ending in the low back (lumbar) area and pelvis, and sometimes as low as the legs.

To the great surprise of clinic physicians I somehow --I do not understand how--was able, in the style of the witchdoctor, to diagnose about 2 percent of the several hundred patients who were treated in my presence in the government clinics (the competing physicians extended privileges to the anthropologist comparable to those favors extended by the witchdoctors) as having the forehead-axis syndrome. These diagnoses were immediately confirmed by the patients as representing a precisely correct description of what was bothering them. There is no evidence that any of this was paranormal--in fact, I was working blindly at the time, unaware of the developments of the field of parapsychology and not even suspecting that any part of the folk medicine might be paranormal. But regardless of what produced the cure in these cases (or of what led to the original diagnoses) it is at the least an example of the effectivenss of folk medicine in treating what the medical doctors thought was a primarily organic disorder.

Another case extensively documented in my field notes seems more clearly related to paranormal diagnosis. I took a debilitated man, relatively healthy in appearance, to the same witchdoctor. The doctor, without giving any physical examination, went into light trance and gave so complex a diagnosis, involving all manner of liver, heart, and circulatory disorders, that I completely discounted it. But the doctor told the man that, although "we do a cure," there was not a very good chance that he would survive the illness. Because of this and the fact that the man was so obviously weak, I took the precaution of having him get an examination by a medical doctor at the public health clinic, an examination which I was unable to watch. A week later I visited the physician and we compared diagnostic notes. The two diagnoses were the same except that the physician's included the functional relationships between the various organic disorders, and it concluded that chances of recovery were fair. Shortly afterwards the patient was admitted to Mandeville Hospital where he died in a few days. I discussed this with the internist who had treated him there, and the original diagnosis was again confirmed. Two further points should be made. First, the two medical doctors both stated that their diagnoses were made only after extensive physical examination and then only confirmed by observing continuation of the disease process which they could not reverse. Second, most of the organic disorders which eventuated in death had developed over a period of many years, so death could not be explained as being due to poisonous herbs, witchcraft, etc., originating from the witchdoctor or others. Hence, there is good evidence to suggest that diagnosis of these organic disorders by the witch doctor was made paranormally.

Jamaican culture may be atypical of cultures in general when it comes to folk healing and the paranormal. This is difficult to assess because very few anthropological studies on folk healing have the benefit of verification of diagnoses by highly skilled physicians as in the cases cited above, and when such is not available it is usually automatically assumed that the folk healer must be wrong. But to return to the original premise, the data from Jamaica, whether typical or atypical, strongly support the observation that a frequent point of occurrence of psi phenomena in traditional cultures is in medical or adaptive contexts.

Voodoo Death

Voodoo death, or "hex," is the obverse aspect of folk healing. This has already been discussed briefly in Eisenbud's chapter in Part I--in respect to his concept of PK in the death wish--and Lyon's chapter in Part IV concerned with vision and psi and their possible relationship to "evil eye." It is discussed now again focusing on its relationship to classical stress theories and with a specific likely example.

In 1970 I went to southeastern Jamaica with a Jamaican-born physician to observe the Kumina people and their trance-inducing ceremonies. Bongo, an 80-year-old sorcerer, or obeah-man, was rejected after he had made repeated sexual overtures to a dancing priestess. Suddenly the priestess went into deep trance. The best musical efforts to bring her out of trance by altering her brain rhythms through the use of deep, resonant drums, a process described by Neher (1962) and possibly related to "whistling bottles" of Peru (Stat 1974), failed. Although her fall caused some external bleeding, the physician kept close watch for all possible signs of concussion for the next two hours before deciding, possibly for his own protection more than hers, that he should demand to take her to a hospital. After doing so, he returned to the ceremonies, leaving her at the hospital still in trance. We then returned to the hospital, at 2:00 a.m. following the ceremony, and found that she was breathing normally and that her pupils reacted properly to light, being neither abnormally dilated nor constricted. She died at 6:00 a.m., 12 hours after entering trance, with no further symptoms until death itself, according to hospital records.

Various other cases of voodoo death which may be paranormally induced have been cited. Ortiz (1973: 153-63) gives some convincing examples in Puerto Rico, but he, and even deVesme (1931: 131-34) realize that it is almost impossible, even in the absence of shock, to be certain of a PK mechanism. There are indirect kinds of evidence which lend credence to the PK explanation and which are not merely contingent on the fact that normal physiological shock has definitely not occurred. Halifax-Grof (1973: 70) notes that Nina Kulagina of Russia has stopped a frog's heart following her other PK performances, without direct contact.

An abbreviated version of the physiological sequence in classical explanations for voodoo death (Cannon 1929 and 1942; Lex 1974) is: fear sets in, the autonomic nervous system "blows out," the adrenal cortex is depleted, and shock leads to death. (All of this is triggered, it is thought, by extreme fear of witchcraft as mediated by complex and poorly understood brain centers.) The explanation involves two other sets of information, one evoked by the experimental physiologist and the other by the anthropologist. First, the situation ought perhaps to be found to be similar in the laboratory for non-human animals. Yet the history of laboratory experimentation with rats contains numerous cases of challenge and fright death in which autopsies clearly reveal that adrenal shock has not occurred (Barnett 1963). Second, the human victim usually knows that he is a victim, it is thought, so that "natural" psychological mechanisms can trigger stress and eventuate in shock and death. It is thus usually safe for an anthropologist to assume that victims have been informed of their impending fates, but Harner (1975) has shown conclusively that among the Jívaro Indians of South America, the victim's only information is ex post facto--after the illness which invariably follows the laying of a hex.

In summary, it would appear that the shock-placebo theories about voodoo death are infinitely more strained and hypothetical than several potentially more plausible ones involving PK, telepathy, etc. Yet among behavioral theorists I know only one, Jule Eisenbud, who has flatly stated that psychokinetic manifestations of the death wish are commonplace in psychiatric practice and therefore that there is every reason to suspect that death can occasionally result from this wish. (Followers of Jung will certainly not be offended by this assertion, however.) Anthropologists seem by comparison to be far off base, conjuring all sorts of Evans-Pritchardian social organizational and Kluckhohnian psychosocial theories to deny the basic human motivations behind voodoo death. What they fail to see is that these theories apply either way: death (and therefore social control) occurs just as surely if it comes paranormally as if it is induced by systematic shock. Therefore the correctness of such functional theories does not really have any relevance for the question of whether death comes from psychokinesis or by fright.

Psychosocial Adaptation

Returning to divination for a moment, we might ask why it takes such different forms in different societies. Divination usually is a form of ecological adaptation in primitive societies. Human adaptation may utilize divination in two ways in food-getting since game is usually plentiful enough but widely dispersed over vast areas: (1) it may serve to locate animals or "wish" them to specific locations (see, e.g., Neihardt 1932), and (2) it may serve to randomize hunting movements where stable hunting patterns would lead to over-killing (the latter idea is not original with me but I am unable to locate the reference). The idea of animals' being "set up" does not seem so far-fetched if we consider the complexity of ecological balance as demonstrated by cybernetic analysis.

But divination in Western society is not used for food-getting per se. Taking the theory most acceptable to scientists, we may say that divination is a response to the stresses of modern industrial society. That would seem to put down the best of psychics, but in fact it does not relate to whether or not divination has valid functions (the more publicized forms, e.g. political predictions, do not have any useful function, in my opinion). Leighton's (1971) massive interdisciplinary study of Canadian societies has shown that food, shelter, and sex drives are far less important among man's striving sentiments than are meaningful goals, recognition of the legitimacy of common social norms, and giving and receiving of love. Whether one accepts the legitimacy of psi or not, it is clearly predictable that divination would shift from food-getting to other goals.

Psychic divination and healing represent no imminent threat to modern medicine. To begin with, no more than a fraction of modern so-called "divination" is genuine, although rare sensitives like Edgar Cayce seem to have had an astounding success rate. Aside from that, modern medicine usually operates more efficiently than psychic healing. But the potential for psychic healing does exist, and the development of ESP-teaching machines as described above by James Beal's chapter may eventually bring these goals to fruition. Physician-radiologist Simonton's (1974) successful treatment of terminal cancer patients at the United States Air Force Hospital with meditation, presumably by the mechanism of psychokinesis, is an encouraging step.

In sum, I have cited several means whereby the scientist may more productively view events which are otherwise poorly understood. He may view them as what they are: new dimensions of mental process. Or, he may consider them as useful tools to control mental and physical balance. Lastly, he may consider them as a part of human adaptive strategy--weapons for survival, both at the primitive and at the industrial level.

It seems fruitless to speculate on what any of these views does to our concept about stress theory. Only extensive research, probably epidemiological in nature, will be adequate to determine to what degree psi influences our behavioral and physiological functioning and, therefore, the degree to which the average person is affected by subconscious day-to-day telepathic or psychokinetic "exchanges" with others.

* * *

Concluding Comments

Most anthropological reports containing information about psi have only sporadic, accidental observations of psi events for which the field worker is poorly prepared. They appear out of the general context of the main work and are seldom related to any overview or general theory. This chapter demonstrated some ways in which psi may be related to medical anthropology based on my experiences and various other reports having to do with voodoo death and the expected psi effects in psychosomatic medicine. The chapter which follows relates more directly to specific effects repeatedly observed in one area, and it places these effects within the context not of a particular theory but of a particular culture.

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DIVINATION AMONG THE SAKALAVA OF MADAGASCAR*

Robert W. Sussman and Linda K. Sussman

Editor's Comments

The Sussmans' work originally became public at the London conference on 'Parapsychology and Anthropology" in 1973. The Sussmans are anthropologists and not parapsychologists and the report was, and still is, in every sense of the word, an ethnographic report which happens to contain extensive data on paranormal events. In that respect it is especially instructive, for it makes no attempt to place the psi data into any preconceived theoretical framework but rather is directed to placing it within an analysis of the Sakalava culture as a whole. It demonstrates, then, the point made above in the chapter on verification during fieldwork: well-trained anthropologists can study psi, just like any other event, without resorting to special techniques or gadgetry.

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The Sussmans did not go to Madagascar (an island east of Africa occupied by the Malagasy Republic) to study psi or attempt to verify the work of Linton (1927, 1933; A. Linton and Wagley 1971: 86-94). They in fact were not even aware that Linton had worked in Madagascar until after presenting their materials at the London conference. Thus, contrary to the claims of parapsychology's detractors, they did not find evidence of the paranormal because they were expecting to find it or were trying to "prove" it, but rather because they observed it. This is usually true in anthropologists' encounters with psi, but is seldom so easily established as here.

The intersection of Linton's work with this of the Sussmans allows us to represent the Madagascar material as being one of the most firmly established accounts of psi to be found in ethnographic fieldwork.

* * *

> Divination is of all times and all peoples. Everywhere and always, man, concerned about his destiny, wishes to lift the veil of the future, as he also wishes to pierce the obscurity of the past or to know the why of things [Decary 1970: iii; translated from the French by the authors].

> The desire to know about events beyond the range of the senses has doubtless always existed. Such practices as fortune telling, mediumship, prophecy and divination have developed because of it, and with them, their techniques--from the use of crystal balls and playing cards to forked twigs and tea leaves [Rhine 1961: 215].

Man has always tried to learn about past and future events which affect his life and about problems over which he has no direct control. Divination is one of the many ways he has devised in his attempt to do this.

Divination is an integral part of the life and religion of the Malagasy people. It is performed all over the island and is used in many diverse situations. The precise methods and means of interpretation, however, vary somewhat both between tribes and between individual diviners. In this paper we shall describe the techniques used in Malagasy divination (sikidy) and some of the contexts in which it is performed. The description below is compiled from our own observations in the southwest of Madagascar (southern Sakalava tribe) and from those of Decary (1970) in the northwest (northern Sakalava tribe). Our observations were made in the village of Vondrove, near the Mangoky River, and those of Decary in Marovoay, southeast of Majunga. Many of our observations agree with those recorded by Linton (1933) on the Tanala. We shall point out some of the differences between the methods used in these three areas.

Divination is performed mainly in cases of sickness, in discovering the identity of thieves or in finding lost objects, in finding a wife, for advice about setting out on long journeys, for advice about crops or livestock, and in predicting future events. It is performed by a traditional doctor (ombiasa) in cases involving serious matters. However, many people know the techniques and perform divination themselves to solve minor everyday problems and to predict the future.

Traditional Malagasy religion is preserved mainly through the ombiasas. Any man can choose to become an ombiasa. He first learns the methods of divination and the contents and uses of various charms and medicines from established ombiasas. He collects medicines over the years and when he feels competent, sets up his own practice. There is no formal organization of healers that determines his qualifications or monitors his practice. It is the task of the healer, therefore, to demonstrate his abilities to the people.

Although they are only part-time practitioners, they are highly prestigious and exert an immense amount of authority and influence over the people, who are willing to pay extremely high prices for their services. They are consulted for numerous reasons including religious rituals (e.g., circumcision and funerals), illness, and social and personal problems. They therefore exert authority not only in religious activities, but also in the social, medical, judicial, and personal spheres of life.

The Malagasy practice of divination by sikidy is thought to be of Arabic origin--as is the form of astrology practiced in Madagascar--and involves many Arabic terms. It is usually performed with the flat, oval, brown seeds of *Piptadenia chrysostachis*, a species of acacia. However, other types of seeds are reportedly used in some parts of the island where this particular species is rare. The procedure is quite complex: four columns of seeds are formed entirely by chance, eight more columns are derived from these according to precise rules, and new columns are sometimes derived from the twelve already formed. Deductions are then made about these configurations and result in the final interpretation. The following is a detailed description of the procedures used in *sikidy*.

Description of Sikidy

The diviner pours out all of the seeds, about 140 of them, which he usually keeps in a small sack. He then places a rock called *aramy* over a small fire. This gives off a resinous odor when burned. With his right hand he slowly mixes the seeds while he recites an incantation. Although the exact incantation varies from individual to individual, it always consists of certain elements: the diviner tells the seeds to wake up and to speak the truth for they know what man cannot know, and he names the founders of *sikidy* or describes how it originated. Decary (1970) reports some very long, elaborate incantations in which the place of origin and the circumstances under which *sikidy* was founded are described in detail and in which its ancient origins are stressed. In the village in which we lived, however, the incantation was quite short and simple:

Sikidy, get up	Fohasikidy
Wake up, do not play	Fohamaly, tsarafily, ka mikadokado
Speak the truth	Ka mivola raha tsy to
Walk in a straight line	Ka mikabeka be
Speak what you know	Ka mivola raha tsy tsire
If you are devious, you are alone	Lahavandy anao raiky
If you are truthful, we are together	Lahato antsika roa
Sikidy of Tsikiloly	Sikidin'ny Tsikiloly
Sikidy of Lehimainte	Sikidin'ny Lehimainte

It may be noted here that the term sikidy seems to refer to the method of divination, to the seeds used, and to a kind of personified spirit that knows what men cannot know. Colin (1959) reports that in addition to addressing the sikidy themselves, some diviners also address Zanahary, the Malagasy deity, and ask him to make the sikidy speak. The sikidy would then seem to act as a kind of liaison between man and god, or a means through which god can communicate with man.

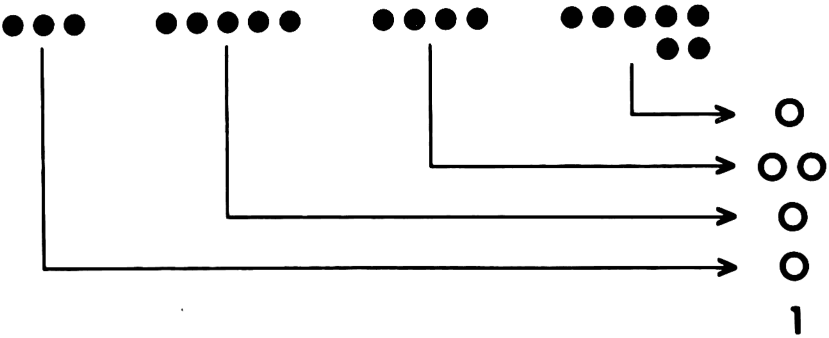
After the incantation, the diviner randomly forms four small piles of seeds and places them before him from right to left (Figure 1). He counts by twos the number of seeds in the pile on the right. If there is an odd number of seeds in the pile, he takes one seed and places it before him; if there is an even number, he places two before him. He then determines whether there is an odd or an even number of seeds in the next pile to the left and takes out one or two seeds accordingly. The one or two seeds are placed underneath the seed(s) he drew from the first pile on the right. He follows the same procedure for the next two piles, from right to left. One column of four rows of one or two seeds is now formed. The basic pattern contains 12 such columns.

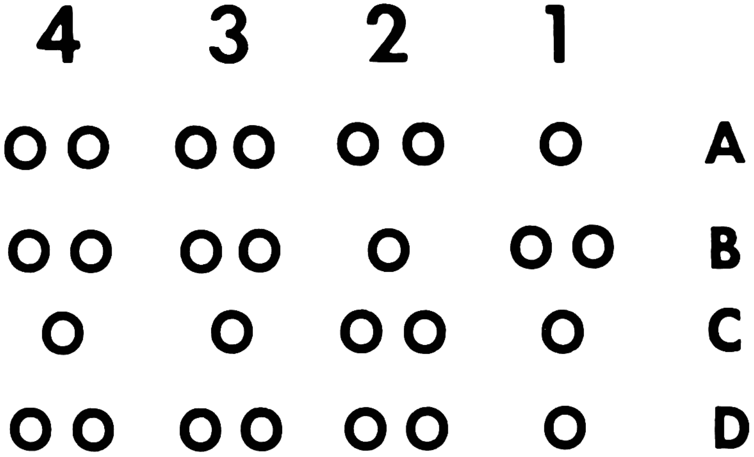
The four small piles are then returned to the remaining seeds, with which they are again mixed together, and the procedure is repeated to form another column of four. This column is placed to the left of the first column. The procedure is repeated two more times until four columns have been completed (Figure 2). The unused seeds are then placed in a large pile.

The first four columns, formed entirely by chance, are referred to by Decary as the "sikidy-mère," or mother sikidy: all of the succeeding columns are derived from them according to the following rules.

The fifth column is formed by adding the top row of the unused seeds, and if the sum is odd place one, below and between these columns (Figure 3a). In the same way, add the second row of seeds in columns 1 and 2 (1b + 2b) and, according to the sum, place one or two of the unused seeds below the first row just formed. Follow the same procedure for the third and fourth rows of columns 1 and 2.

The same process is repeated adding each row of columns 3 and 4 to produce a sixth column (Figure 3a). The





Top: Fig. 1. The formation of the first column. Bottom: Fig. 2. The first four columns, or "mother sikidy."

seventh column is derived similarly by adding each row of seeds in columns 5 and 6 and is placed between these columns (Figure 3b).

The eighth column is formed by adding, from right to left, each column of seeds in the first and second rows of the "mother sikidy" (1a + 1b, 2a + 2b, 3a + 3b, 4a + 4b) (Figure 4a). It is placed to the left of column 6.

The ninth column is formed by summing each

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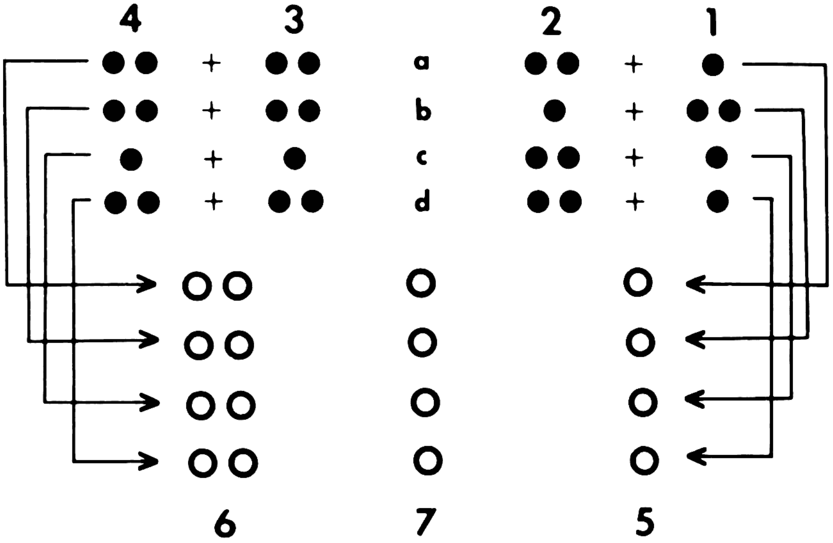
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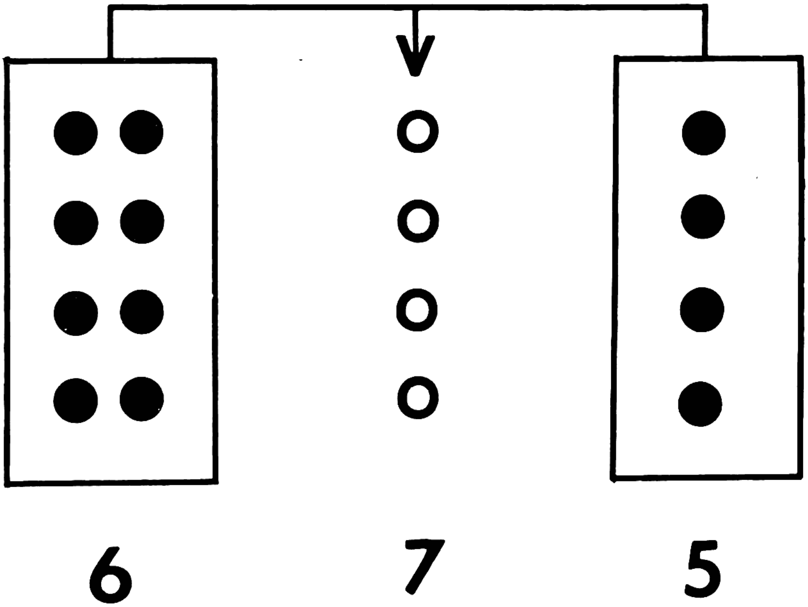
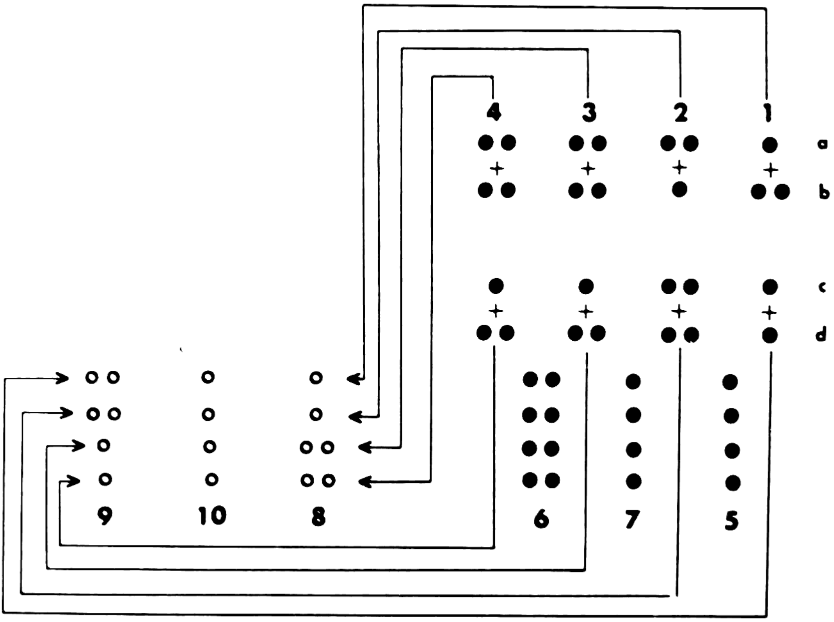


Top: Fig. 3a. Formation of columns 5 and 6. Bottom: Fig. 3b. Formation of column 7.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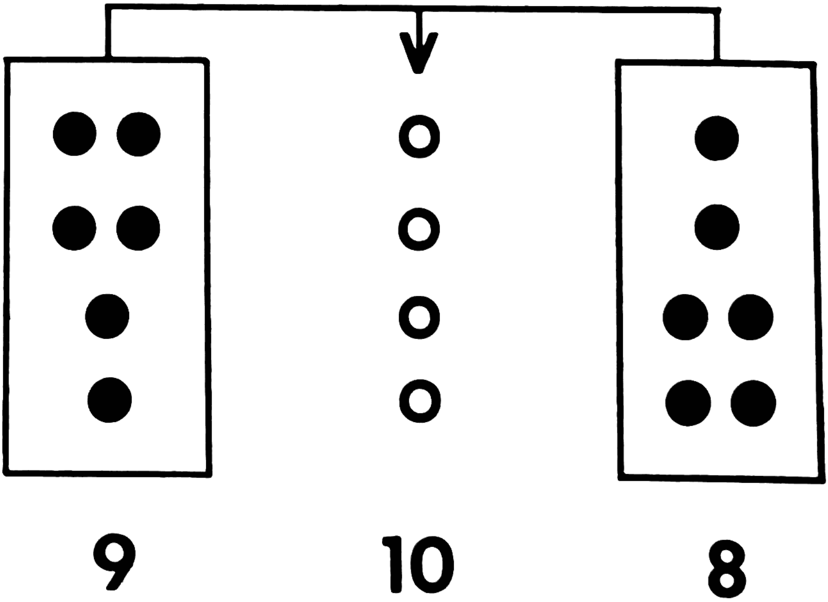
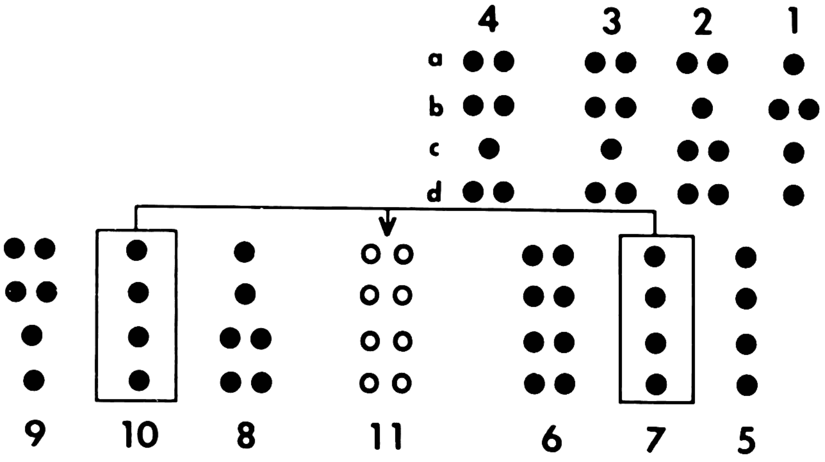


Top: Fig. 4a. Formation of columns 5 and 6. Bottom: Fig. 4b. Formation of column 10.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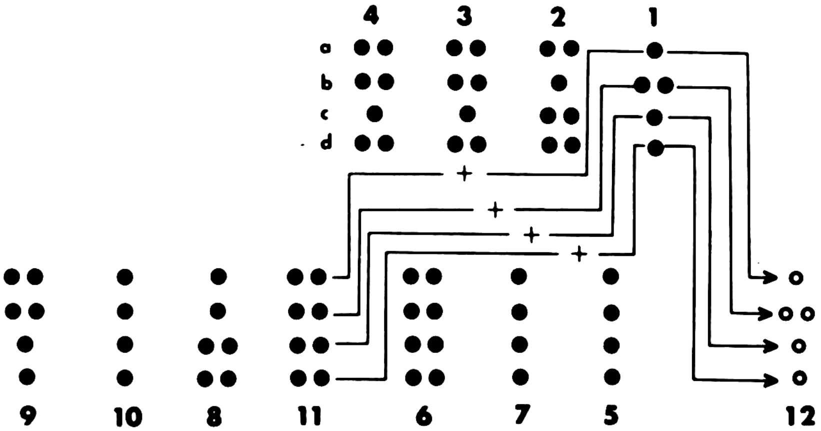
4
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+
+
+
+
9
10
8
11
6
7
5
12

Top: Fig. 5. Formation of column 11. Bottom: Fig. 6. Formation of column 12.

column in the third and fourth rows of the "mother sikidy" from right to left (1c + 1d, 2c + 2d, 3c + 3d, 4c + 4d) (Figure 4a). It is placed to the left of column 8. Column 10 is derived by summing each row of seeds in columns 8 and 9 and is placed between them (Figure 4b).

The eleventh column is placed between columns 6 and 8 and is formed by summing each row of seeds in columns 7 and 10 (Figure 5).

The final column is formed by adding each row of seeds in the first and last columns (1 and 11). It is placed to the right of column 5 (Figure 6).

Each of the 12 columns of the sikidy signifies an object or person:

Column	Malagasy term	Object or person signified
1	talé	the client
2	maly	the object or situation in question (per Linton: goods or wealth)
3	fahatelo	a man, thief, or caster of the spell on the client; literal translation, "third" (per Linton: brother)
4	bilady	the earth, ground
5	lalana	the road, the path one must follow
6	sohota	father and/or mother (per Decary: trespasses; white men or masters; per Linton: father)
7	saily	conversation, gossip (per Decary: people, inhabitants; per Linton: mother, reunion)
8	haja	food
9	fahasivy	the dead, ancestors (per Decary: someone closely involved with client); literal translation, "ninth"
10	ombiasa	the diviner, traditional doctor
11	haky	god
12	ankiba	house of the client or of a stranger

Each row of the "mother sikidy" also signifies something:

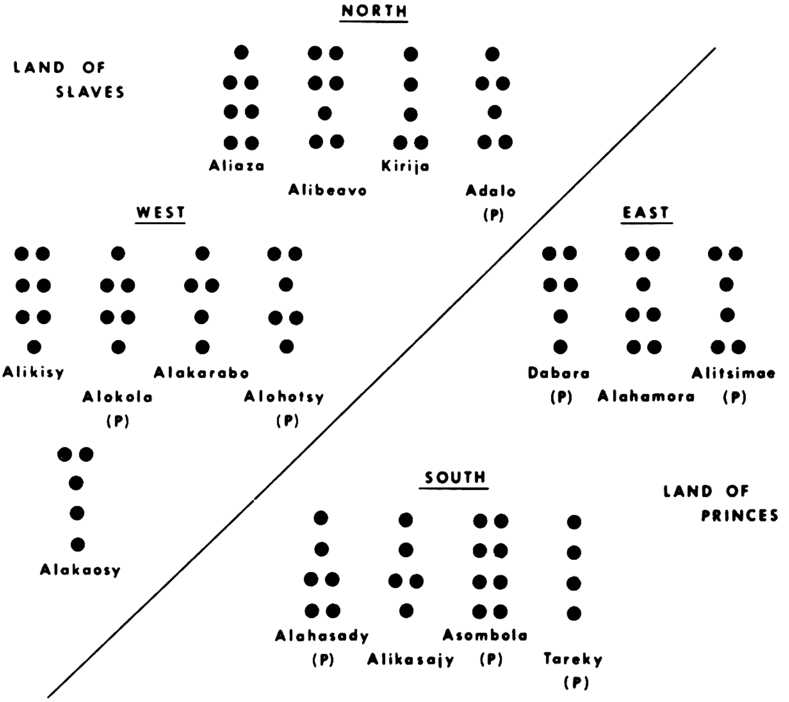
NORTH
LAND OF SLAVES
Aliaza
Alibeavo
Kirija
Adalo (P)
WEST
EAST
Alikisy
Alokola (P)
Alakarabo
Alohotsy (P)
Dabara (P)
Alahamora
Alitsimae (P)
Alakaosy
SOUTH
LAND OF PRINCES
Alahasady (P)
Alikasajy
Asombola (P)
Tareky (P)

Fig. 7. Names and locations of the 16 column configurations of *sikidy*.

Row	Malagasy term	Object or person signified
a	*fianaha*	son or child
b	*manabily*	the question or problem (per Linton: servant, slave)
c	*alisay*	a woman--any woman, the wife of the man signified by column 3, or the woman a man wishes to marry
d	*fahavalo*	accident, thief, enemy; literal translation, "enemy" and "eighth"

There are 16 possible column configurations. Each is signified by a name, assigned to a cardinal direction, and

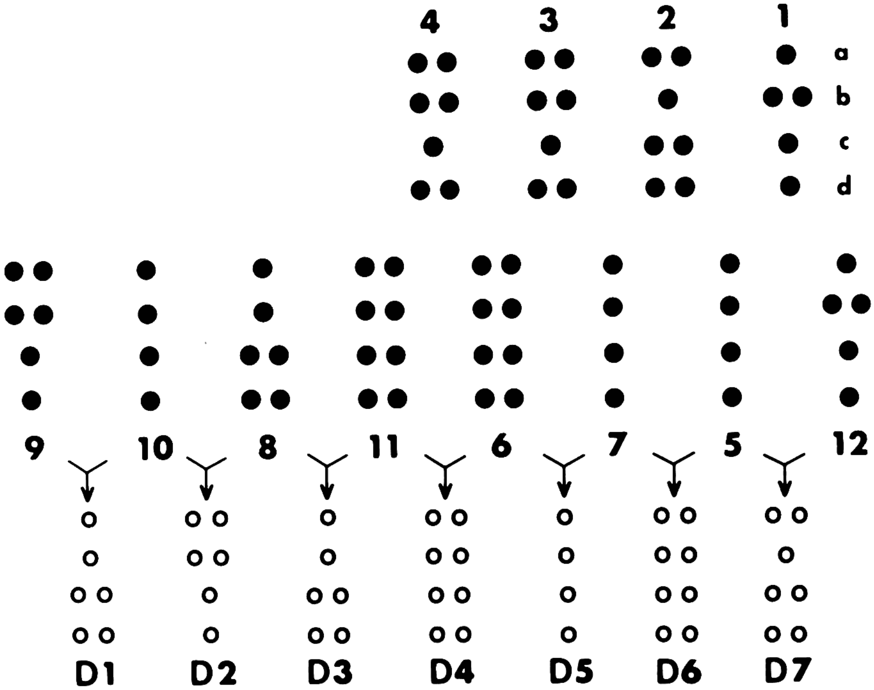

Fig. 8. Formation of columns signifying days of the week.

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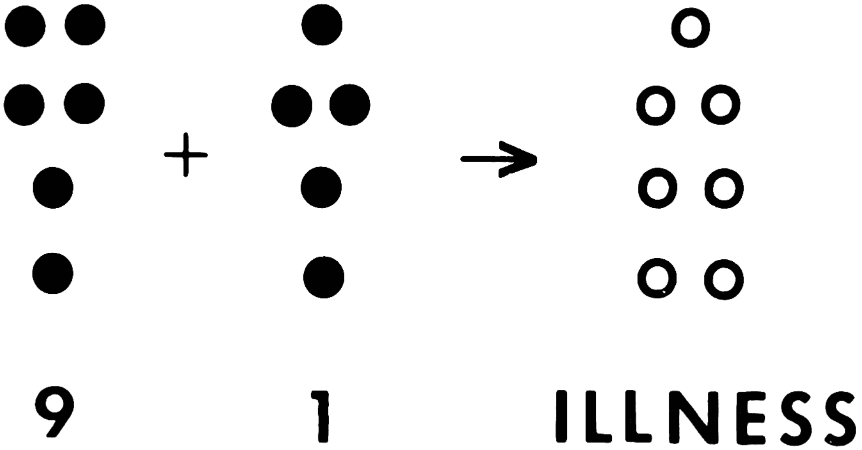
ranked as either a slave or a prince (andevon'ny sikidy and andrian'ny sikidy respectively). The cardinal direction in which each configuration is found and the names of the configurations vary somewhat from region to region. Where we studied in southwest Madagascar and among the Tanala (Linton 1933), they are signified as shown in Figure 7. Decary, however, reports that in the northwest, Alohotsy and Alakaosy (in the west in Figure 7) are "migrators": they are in the east from sunrise to 10h, in the north from 10 to 15h, and in the west from 15h to sunset. They are never in the south since divination is not performed at night. (In some regions it is believed that mischievous spirits may interfere with the results if divination is performed at night.) In addition, the configurations named Alikasajy and Aliaza below are called Betsivongo and Adimizana respectively in the northwest.

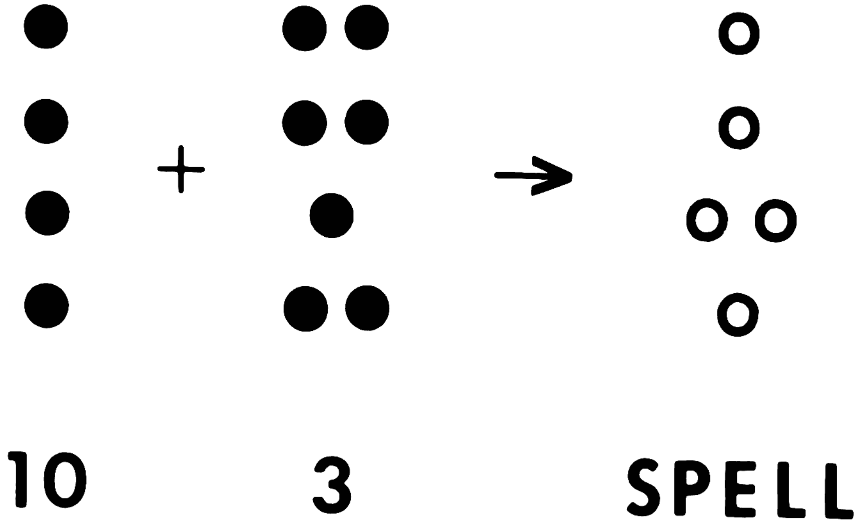
Those configurations which are princes are designated by a "P" in Figure 7. The south and east is referred to as the "Land of Princes" and the north and west as the "Land of Slaves." It can be seen that each configuration which holds the rank of prince consists of an even number of seeds, and it is interesting to note that the column signifying God (column 11, Figure 6) must mathematically always contain an even number of seeds and, hence, be a prince. (Diviners usually make use of this rule to see quickly whether they have made any mathematical errors in deriving the bottom eight columns.)

According to Decary, the pattern resulting from divination is interpreted by considering the ranks of the items signified by each column and the cardinal directions in which they are found. Princes always dominate and nullify the power of slaves. A battle between two princes is serious, if not mortal, but princes from the same territory are not detrimental to each other. In addition, a person or object from the Land of Princes is more powerful than one of the same rank from the Land of Slaves.

Where we studied in the southwest, the column configurations were not ranked as slave or prince and interpretation proceeded by association of ideas according to which columns were found in the same cardinal direction. Linton (1933) reports that among the Tanala, in addition to assigning each column configuration to a cardinal direction, each is also attributed with a specific meaning (e.g., sign of good health, sign of death, sign of good news). The sikidy pattern is interpreted through association of ideas, taking into account the groups of columns found in each cardinal direction and the meanings of the associated configurations.

The particular problem of the client may require new columns, designating additional items, to be derived. For example, if one wishes to know what day one should make a journey, seven more columns, each signifying a day of the week, are formed by adding each row of seeds in columns 9 and 10, 10 and 8, 8 and 11, 11 and 6, 6 and 7, 7 and 5, and 5 and 12 respectively (Figure 8). The first new column (D1) represents the present day, the next (D2) represents tomorrow, etc. The column of the same configuration as that of the client (column 1) is the day on which the event in question took place or should take place. If none of the seven columns is the same as column 1, the one the most similar to it (e.g., prince of the east, slave of the west) is the determined day.





Top: Fig. 9. Formation of column signifying "illness."
Bottom: Fig. 10. Formation of column signifying a spell.

There are many other reasons for deriving new columns. We shall, however, mention only a few, related to illness. The following descriptions of divination about illness is drawn wholly from Decary.

The diviner considers three major factors about illness: (1) its gravity, (2) its cause--punishment by superhuman powers, or poison or spells cast by men, and (3) its remedy.

The illness is signified by a column formed by adding each row of the ninth column (the dead, the ancestors) and the first column (the client) (Figure 9). In Figure 9, the client is a slave of the west and the sickness is a slave of the north. They are of the same origin--the Land of Slaves --and so are not detrimental to each other. This would mean that the client will not die. If, however, the sickness were a slave of the east, the sickness and the client would be of different origins, and since the sickness would be from the Land of Princes, the client might very well die.

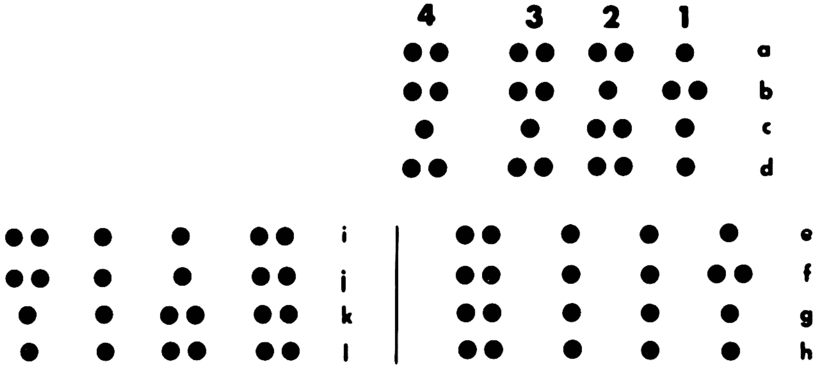
The next step would be to determine whether the illness is caused by a spell or poison or whether it is caused by superhuman powers as a result of the client's breaking a promise or taboo. A spell is represented by a column formed by adding each row of column 10 (the diviner or traditional doctor) and column 3 (man, thief, caster of spell) (Figure 10). If the spell is of the same origin as the sickness or is more powerful than either the sickness or the client, the illness is caused by a spell. This is the case in Figure 10.

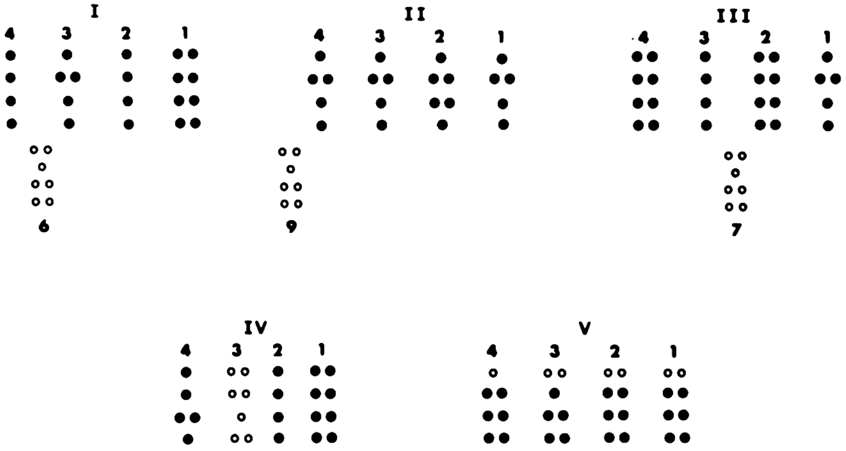
The eight columns in the lower portion of the sikidy pattern would then be divided into two groups (Figure 11). The resulting eight rows of four (rows c through l), from right to left, signify additional items (e. g., children of other houses, women of other houses, field) that may have been involved in the casting of the spell or poisoning of the food.

Other columns signifying, for example, various types of foods which may have been poisoned may also be derived by combining various columns and rows. In this way, it would be possible to determine the person who poisoned the food, the foot itself, the day the food was eaten, and the gravity of the illness. Similar procedures are used to obtain information about illnesses caused by superhuman powers as a result of broken promises or taboos.

Other Uses of Sikidy

The sikidy are also used in making amulets and medicine horns. These are used for such purposes as ensuring





Top: Fig. 11. Eight rows signifying items involved in casting of spells or poisoning of food. Bottom: Fig. 12. The five sikidy patterns for, e.g., an aolilolo.

good health and fruitful work, keeping away spirits, and protecting against epidemics. In most cases, they are not taken internally and have psychological rather than direct physical effects--much like any good luck charm. The amulets usually contain sacred sand (fasy sikidy) which comes from a particular location, wood shavings, metal, oil, and sometimes honey. These ingredients are usually either sewn into a piece of red, yellow, or black cloth and worn around the neck, or put into a zebu horn or other container. On some occasions the ingredients are applied to the face.

Before placing the ingredients into the container, certain sikidy patterns are formed and the sacred sand is placed on particular columns. For example, for an amulet to keep away spirits (an aolilolo) the five sikidy patterns shown in Figure 12 were made and sacred sand was placed on the columns represented by o's.

It may be noted in Figure 12 that the entire 12 columns of each pattern were not formed, but simply the first four columns and the particular columns on which sand was placed. After the sikidy configurations have been made and sand has been placed on the required columns, the sand is then mixed with the other ingredients and the amulet is completed. The finished amulet and the money paid for it are held over a burning piece of aramy and an incantation is recited.

We were unable to discover the reasons for forming specific sikidy patterns in making amulets and for placing the sand on certain columns. Different patterns, however, are formed for each type of medicine and it appears that the particular patterns used vary from ombiasa to ombiasa.

Discussion

Divination by sikidy is extremely impressive. Some factors which contribute to this are: the complexity of the procedure itself; its ancient, mysterious origins and foreign terminology; and the supernatural powers attributed to the sikidy. All of these seem to reinforce the confidence of both the clients and the diviners in the technique.

The great confidence that the people have in sikidy has been noted by several authors (DuBois 1938; Colin 1959; Decary 1970). Decary (1970) cites Père Luis Mariano (here translated from the French) as one of the first Europeans to speak of this: "The inhabitants of the West undertake no important act without performing divination by lots which is done in several ways on the sand with the seeds of the tamarind...."

DuBois (1938) stresses that the people by no means regard the outcomes of sikidy as arbitrary, but rather attribute them to some mysterious power who speaks to men through the sikidy.

This confidence is well illustrated by two experiences which we had. As far as we know, divination was performed about a matter directly related to us on only two occasions. The first time was when we lost a cigarette lighter. The diviner performed sikidy and said, with certainty, that it was in the car. Although we searched the car thoroughly and did not find it, he still maintained that it was there. We decided that we must have dropped it somewhere on the road. Several weeks later, however, he found it in an almost inaccessible place in the car. His second performance of sikidy was to find out what day we would return to the village from a trip we had taken. He knew the week we were arriving but not the day. This was the time of year when rice was being planted and the men spent all day in the fields. When we arrived in the village, however, the diviner was not in his field, but at home waiting for us. He said the sikidy had told him we would be coming back on that day.

It is important to note here that the people have confidence not only in the sikidy, but in the diviner as well. Each ombiasa has his own reputation, and some are thought to be better than others. Although the sikidy are invested with power, it is ultimately the task of the diviner to interpret the results, and it is the ability of the diviner that is called upon for this task. Since the results can often be interpreted in several ways, the sensitivity of the ombiasa to his clients' problems and social situations and his practical knowledge of their affairs could be of use to him in formulating the final interpretation.

It does seem that sikidy could be a vehicle through which ESP and PK can operate. The atmosphere in which it is performed is probably conducive to the functioning of ESP and PK in that it is usually relaxed, there is most likely a minimum of anxiety on the diviner's part since the outcome is attributed to some external, supernatural power rather than to his own powers, and there is a very strong belief in the validity of the procedure. The ESP ability of the diviner is probably not the sole determinant of his success, but an important and useful complement to the other personal qualities and abilities he has developed.

A number of authors have discussed the importance of various factors which aid traditional healers (as well as

Western medical practitioners) in the process of solving social and psychological problems (e. g., Rogler and Hollingshead 1961; Murphy 1964; Prince 1964; Kennedy 1967; Mendel 1968; Prince et al. 1968; Edgerton 1971; Rogers 1971; Torrey 1972). These include a shared view between the healer and his clients about the causes of the problem; the ability of the healer to classify the problem; belief in the curing techniques and confidence in the healer; the prestige of the healer in the community and his use of various paraphernalia which enhances this prestige; his ability to prescribe various remedies and to manipulate the social environment; and the elements of hope, suggestion, and group support.

Divination and the "rituals" surrounding its performance are the most important vehicles used by the _ombiasa_ in Madagascar for solving social and psychological problems. The clients' confidence in _sikidy_ of course enhances the _ombiasa's_ chances of success. However, the reputation of the particular _ombiasa_ is dependent upon his ability to solve the problems brought to him, and the people in the community are aware of his past successes and failures. All _ombiasas_ are probably equally familiar with the techniques used in _sikidy_, and therefore it is the personal qualities and abilities of the _ombiasa_ and his knowledge of traditional pharmacopy that determine his success.

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Editor's Conclusion

To paraphrase Eisenbud's earlier comments, the Sussmans have recognized that it does not make much sense to say that the Madagascar diviners are merely doing something better than the best of magicians possibly could. They have been cautious in their observation that the evidence does not establish the fact of ESP. But, accepting ESP as established by more direct tests of a controlled laboratory environment, and recognizing that the conditions of relaxation, etc. are those known to be psi-conducive, they have taken the data which were available to them and made sense of of divination in the context of a specific culture. Divination by sikidy is an integral feature of the Sakalava culture--it is ancient, in fact. The use of information divined this way is related to "clients' problems and social situation," including those problems which relate to health. This feature is therefore a clearly adaptive feature of this culture.

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Part VI

Some Practical Uses of ESP: Psi and Archeological Reconstructions

INTUITIVE ARCHEOLOGY

J. N. Emerson

Editor's Comments

J. N. Emerson, a leader in developing "pararcheology, " has used the term "intuitive archeology" to describe his work. Its use reflects the frequent suspicion on the part of many "normal" archeologists that some of their success at one time or another has been due to intuition, or an uncanny and inexplicable supersensitiveness. They do not wish to suggest that this is paranormal, nor do they wish to suggest that it is supernatural, for in most cases it is probably neither. However, as interest in the paranormal has grown over the past decades, more and more experiments have been contrived in such a way as to virtually eliminate the possibilities for "normal" explanations. Hence it is fair to say that the terms, intuitive and psychic are synonymous to most archeologists who specifically employ psychics or sensitives to expedite their excavations.

Psychic archeology has most commonly been used in the sense of "dowsing (i.e., as in "water witching"). Emerson, for example, has been able to locate such features as burials and stockades by using an on-the-spot psychic. Goodman, in this section, describes how he discovered an early man site using a trance psychic from over 1000 miles away. This sort of operation may be described as "map dowsing."

Emerson describes here how psychometrizing (reading facts about people or environments which have been in contact with an artifact) may give us rather more direct information about such details as economic customs, personalities, and everyday lives of the owners of artifacts. The idea of this sounds ridiculous at first, but if one considers that map dowsing works, then it becomes apparent that psychometry is just a step away. Not that any good archeologist will simply take a psychometric reading and accept it at face value! But if one is willing to accept the reading as a working hypothesis, then that hypothesis (out of thousands of possible alternative ones) can be approached by further excavations. As Emerson's work on the argillite carving shows, this technique can enormously reduce the number of possibilities and dead-end suggestions which excavation or ethnohistoric work might try to test. If such hypotheses are scientifically verified only half of the time, the archeologist is still far ahead in what he can learn, given a limited number of research dollars.

* * *

Segments of this work have been reported for the Canadian Archaeological Association, the American Anthropological Association, and the Eastern States Archaeological Federation (Emerson 1973a, 1976b, 1974a). I welcome the opportunity to present these materials and some new evidence here. I have chosen to call my study "Intuitive Archaeology" for it does not seem to be based upon a learning process. It seeks to bring the disciplines of archaeology and parapsychology together into a meaningful study of human prehistory.

My research began on the play level when I learned that my friend, George McMullen, could "psychometrize" artifacts: that is, he could hold an object in his hand, concentrate upon it, go into a light trance and then relate details about its history and the circumstances surrounding that object. When I found that most of the information he was giving me was accurate it took no major flash of insight for me to realize that I had hundreds of excavated artifacts that could well benefit from psychometry. George and I began to work.

I was understandably skeptical. However George's "readings" proved to be relevant and rich in detail. I was able to assess his statements on the basis of knowledge of the sites I had excavated and on a broad understanding of the archaeology and history of the Ontario Iroquois peoples.

I next learned that George was psychometrically sensitive to archaeological sites. We visited several. George would walk very rapidly over the area to "orient" himself. Then he would tell me about it. He would assess the age of the site, describe the people, their dress, their dwellings, economy and general behavior. He would also provide me with specific excavation guidance. He indicated the exact location of a palisade wall. In one case he walked around the perimeter of an Iroquois longhouse, while I followed behind placing surveyors' pins in the ground. Six weeks later the entire house was excavated exactly where he had said it would be. George's performance was thus testable not only by archaeological knowledge and ethno-historical data, but by follow-up excavation as well. I have estimated that George is 80 per cent accurate. George and other sensitives have performed the same feat, with the same accuracy, utilizing topographical maps far from the areas depicted on the maps.

George is constantly being asked to submit to tests of his ability. One particular test was to have great importance in the development of my research methodology. In March 1973 at the annual banquet of the Canadian Archeological Association, George and I were presented with a black, argillite stone carving to analyze psychometrically. Very little was known about this artifact. It had been dug up in a post-hole excavation one quarter of a mile south of the town of Skidegate on the Queen Charlotte Islands, British Columbia (Millar 1973). The rest was speculative. To me, the carving appeared to represent the head of an ape or an early form of fossil man. The owner thought that it might represent the mythical Sasquatch--the Canadian counterpart of Bigfoot, or the "abominable snowman."

Holding the artifact George told me a complex story. In essence, he stated that it had been carved by a black man, a native of West Africa who had been captured and taken as a slave to the Carribean by the Spanish. Later he was taken on an English sailing ship to British Columbia where he escaped, met the natives, was accepted, settled down, married, raised a family and died there. It was an interesting statement, but at that point George's story appeared to exist in a complete historical vacuum. There did not appear to be any way to either verify or disprove the account.

Then a strange series of events took place. Quite fortuitously, I met a second psychic person named Sandy. Sandy had never done psychometry. Much to my surprise, and to hers, she sat in my living room and proceeded to confirm in elaborate detail several of the points of information that George had given me, and added further information for study. Once again, it took no major flash of insight for me to see the next step in the development of my research: the concept of the comparative psychic team was born.

Over a period of a year the argillite carving was presented independently to a total of eight psychic persons for readings. None knew where it had been found, nor anything that had been said about it. The statements were tape recorded. In summary, each confirmed and reconfirmed independently much of what the others had said. A year after receiving the artifact I reported to the CAA (Emerson 1974b) that at least three major points had been psychometrically confirmed; namely, that:

(1) The carver was from Africa,

(2) He was brought to the New World as a slave, and

(3) He went to British Columbia.

With this comparative evidence available, it appeared that George's initial statement was much more solidly based in a category which we might call "psychic-historical truth." The collective statements, however, still seemed to exist in a historical vacuum, although a rather novel one. There looked to be no way of verification without a truly prodigious historical research effort; and yet help was in sight.

Quite fortuitously, again, a graduate student with a considerable background knowledge of African art just happened to come to my home for a casual visit. I gave him the argillite carving and asked him for his comments. It was a sort of "What in the world?" anthropological game for him to identify and locate the object.

Point by point, in great detail, he demonstrated that the art style manifest in the production of the carving was typical of West Africa--"More specifically the upper reaches of the Volta" (river). It appeared that the psychometric data had had, at least in part been supported by a disciplined knowledge of West African art styles (Emerson 1974b: 16).

This is roughly the current point of my developing research approach. I fully realize that what I have presented is more a personal testimonial, a statement of faith, than it is a scientific treatise for publication. However, I feel that there is a place for such statements in the generation of additional research.

The future development of this research would appear to hinge upon the investigation of at least two requirements: first, to investigate the proposition that individuals do exist who can perform in a manner similar to George; and second, to gather case studies of a controlled, concrete type of evidence which will demonstrate that archaeologists have had at least limited success working with such intuitive informants.

The fact that human beings do have such abilities would seem to be demonstrated beyond a reasonable doubt. Persons such as Croiset (Pollack 1964), Hurkos (Browning 1970), and Johnson (Steiger 1973) have been studied and reported in considerable detail. The readings of the late Edgar Cayce, the "Sleeping Prophet," have been intensively assessed and studied. As has been said by Dr. Stanley Krippner, "It is fairly easy to take isolated bits and pieces of the phenomena of life and sweep them under the rug year after year. But they start to accumulate and the bumps get enormous.... You can't ignore them any more" (Chance 1973).

There is little consistent evidence known to me that archaeologists have employed intuitive, or psychic persons in their excavation programs. The archaeological investigation of Glastonbury Abbey by Frederick Bligh Bond is perhaps a tragic precedent (Kenawell 1965). Dr. Holzer (1969) recorded a number of readings upon New and Old World sites by Leek, the English psychic. But these do not seem to have been followed up by any excavation program. Professor Robert Redford of Lewis and Clark Community College, in Illinois, was recently reported to have been presented evidence about a middle Mississippi culture from the psychometry of human teeth by a psychic team. Other investigations are underway, but to attempt to discuss them here would be premature.

It is my impression that many field archaeologists, including myself, have had brushes with the psychic during their field investigations, but that they have preferred to leave them, if not undiscussed, at least unpublished; and they do not seem to have seen fit to follow them up in any way. Thus there is little evidence for a convincing effort to develop a methodology involving the alliance of archaeology and parapsychology.

The monumental literature being produced on allied and relevant subjects cannot be ignored in research design. This sort of thing has been popularized by Sheila Ostrander and Lynn Schroeder (1970) in their Psychic Discoveries Behind the Iron Curtain. Casteneda's studies with Don Juan and Andrija Puharich's (1962) Beyond Telepathy are thought-provoking and relevant documents. Robert Ornstein's (1972) The Psychology of Consciousness, which relates intuition to a right-brain hemisphere function, as opposed to a left-brain function, would appear to help us understand George's intuitive statements. Stanley Dean's pursuit of the field of "meta psychiatry," stimulated by the pioneer work of Richard Maurice Bucke (1969) on cosmic consciousness, is bound to have impact. In its own way, this research seems to be a search for comparative ultimate truths.

To date my own studies have allowed me little time or energy to try to understand the operating processes, or to seek answers to "why" it happens. My efforts have been mainly directed towards recording and carrying out no more than a beginning assessment of such readings. In the search for explanations, a bio-physical answer would have great appeal and would suggest that the process is a "right brain" function, and thus a human faculty available to all. Yet as the phenomena are observed, it becomes increasingly difficult to ascribe psychic readings to a biophysical, or even a physiopsychological explanation. To attribute such insights to "another personality," to the subconscious, or to the unconscious, does not perhaps provide a satisfactory answer to racial memory, or the group unconscious. The possibility of spirit forces must be faced. The subject matter revealed is often so alien in time, space and culture that a non-spiritual explanation leaves too many questions unanswered.

The data sources appear to follow a hierarchy of increased complexity, from such phenomena as the ouija board and automatic writing, to dowsing and divination, through psychometry, meditation, hypnosis, telepathy, astral travel and ultimately to trance mediumship. The writings of Jane Roberts (1970) are an admirable description and record of this process in The Seth Material. This gradient of activity calls for study.

I do not see that the answers will lie in current orthodox science; nor am I yet prepared to leap forward into the realm of spirit guides, masters and even more elevated galactic beings. In the archaeological field, and in allied parapsychological areas, the study of known energies and energy fields may provide clues. The study of magnetism and magnetic anomalies is promising. Little known, or virtually new energy sources call for study. The work of Reich (Mann 1973 and Bordella 1973) and Rudolph Steiner (Shepherd 1954) are pertinent here. The accumulating evidence arguing in favor of not only new kinds and sources of energy, but also for new possible levels of consciousness and new kinds of reality to be perceived cannot be overlooked.

Perhaps the greatest necessary step forward will be to restore the faith of scientists in such investigations so that such answers may be forthcoming. The role of faith in science is a matter often overlooked and underestimated. Fromm (1956) writes convincingly on this topic and comments upon the nature of men who are capable of such faith and those who are not.

It appears inevitable that redefinitions of science and its scope must evolve, and are already beginning to do so. At the same time a similar redefinition of religion must take place. The orthodoxies of each become more restrictive and less tenable day by day. A new fusion might lead to great discoveries. I am not sure that I, nor humanity are ready for such revisions any more than were those men who had to admit that the flat world was really round. But the signs are increasingly all around us; the new days are urgently and restlessly on the horizon. There is an atmosphere of inevitability. It could be argued, as it has often been predicted for homo sapiens, that we are seeing the next step in the evolution of our particular form of man as the Aquarian Age unfolds.

Finally, I would suggest that no one enter into such studies lightly or facetiously. It is inevitable that one will be subject to a series of deep personal shocks, some pleasant and some unpleasant. One must become accustomed to the realization that, in terms of Jung's "synchronicity" and "meaningful coincidences" (Koestler 1973), a pattern emerges which suggests that the research program is being "led" or "directed." Moreover, the direction is often obscure and the end is ever changing.

Working with psychics is a delicate business and must be done with great consideration, understanding and controls. Such activity is often very energy consuming and debilitating. It can even be harmful.

To return to Fromm, the motivation must be "of the highest" and literally flow from "the love of humanity." To the anthropologist, morally relativistic by tradition, this will seem an almost insurmountable proposition. Less than the highest motivation, however, seems but to lead the research down dark, devious and unproductive alleyways in the maze of understanding. High motivation and faith, in my experience, are essential ingredients.

I began by stating that my study of intuitive archaeology began on the play level. It has now become a quite serious matter. For the scientist it is a humbling experience, and a shocking one. Pragmatically the process seems to work a great deal of the time; thus it is worthy of pursuit. I recommend that it be pursued with a constant sense of scientific skepticism while at the same time maintaining a sense of humor, and that the work be interspersed with periods of rest and relaxation for the purpose of keeping perspective and rebuilding and renewing the energies expended. Such work in the field of intuitive archaeology can, and, I believe, has led and will lead to a richer, and hopefully a more accurate understanding of human prehistory.

* * *

Editor's Conclusion

Emerson's experience with the argillite carving, eventually identified in its apparently proper historical context by an analysis of art motifs, is always reminiscent of a basic element of serendipity: you don't know you're looking for anything until after you've found it. The appearance in Emerson's home of the particular student of African art to make such an identification is perhaps equally representative of a "meaningful coincidence." But the use of sensitives and subsequent verification of their interpretations is not always so simple.

The operation called psychometrics, or learning about events associated with artifacts by "reading" them psychically, is hard to interpret because there is always the possibility that the psychic is telepathically gaining information from the archeologist, so that the performance produces no original (or no more accurate) information. If two archeologists with conflicting views are present simultaneously, this may produce conflicting paragnostic information as in the case of one psychic's psychometrizing an Iroquois pipe of Emerson's in my presence (see Farrelly 1974). Emerson is one of the leading authorities on the Canadian Iroquois. The questions asked of the sensitive were based on my reinterpretation of the New York Iroquois, based on a model from population ecology (Long 1973) to which Emerson does not subscribe. Some responses of the sensitive (who was unaware of this conflict between Emerson and myself) seemed to support my new interpretations while others contradicted those in support of Emerson's. Thus, validity cannot be tested until such time as social theory and archeological excavations are somehow harmonized and the seemingly contradictory responses become congruent. Even then the question will remain: "Was she simply picking the surest impressions of two minds?"

As Emerson himself notes--I believe this is with some alarm to him--the implications of psychic archeology cannot help but extend into metaphysical questions far beyond the bounds of archeology. Hence, the psychological impact of it will be felt at the very core of the archeologist's personal values. But the knowledge is worth the shock.

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MAGDALENIAN PARAGNOSTICS
Archeological Model Testing with Stefan Ossowiecki and Others

Zbigniew W. Wolkowski

Editor's Comments

Dr. Wolkowski received his degree in physics. His interest in psi appears to have originated from his observation about the effects of heat on the molecular structure of an iron object which then lost its psi properties for psychometric analysis, as he will describe later. It was thence that he entered the field of archeology. On the occasion of my first encounter with him in 1974, I advised against his presentation of an already accepted (but unread because of a postal strike) paper because so many questionable assertions were contained in it. Upon recently learning (through a source other than Wolkowski) that the United States government is presently studying one of the absurdities--this one was found by him at the Nazca Site in Peru, made popular to UFOlogists by von Däniken's famous books--I relented, encouraging publication of this chapter on Ossowiecki and even including a description of the absurd artifact from Nazca.

The weakest aspects of Wolkowski's work here are first, that the Ossowiecki letters are vast (so that many of his predictions must be correct if only by accident), and second, that much of the psychometrizing relates to matters so detailed and personal (e.g., a Magdalenian hunter's account of everyday life) that there is no possibility of verifying even a majority of the predictions. But because of the vastness of Ossowiecki's work, because of the unanswered questions about the Upper Paleolithic, and because of the radical shifts of accepted archeological opinions on various subjects over the past 30--or even 10--years, I feel that a thorough archeological examination of Ossowiecki's and Réant's paragnostics is in order. Wolkowski is heading up a world-wide crusade to honor Ossowiecki in 1977, a century from his birth. I concur with this endeavor and hope that anthropological research will be undertaken on the Ossowiecki papers.

* * *

Introduction

I take the liberty of addressing anthropologists, but only as an information relay for Stefan Ossowiecki, "traveler into prehistory."

Born to a Polish family in 1877, Stefan was one of the celebrated sensitives of the period between the two wars. Many of the experiments done with him have become classics. He was extensively studied by such eminent researchers as Richet and Geley of the French Institut Métapsychique International, who experimented with him repeatedly in Warsaw and Paris. Similarly, he attracted the attention of von Schrenk-Notzing of Germany, Mackenzie of Italy, and Dingwall of Britain. Clairvoyance was the primary object of study, using sealed letters. Some psychometry was included, or what I prefer to call paragnostic information retrieval.

Ossowiecki took part in scientific experiments willingly and used his abilities to help whoever asked, often at the expense of his own health and wealth. He never accepted payment, and his dedication to research and the cause of his fellow human beings was remarkable. During World War II he refused to leave Warsaw, "because people need me." He went through the Nazi occupation and helped scores of people, receiving an average of five persons each day during five years. He gave accurate information, usually tragic, on those missing, imprisoned, tortured, or dead. On August 5, 1944, he himself was most probably massacred with many others in the headquarters of the Gestapo in Warsaw. There is no way of our ever knowing what was contained in his last unpublished manuscripts, which were burned by the Nazis along with his body.

The Ossowiecki Papers

During July 1974 a meaningful coincidence occurred. I visited Mr. Swida, Stefan's stepson, in Chicago, where a local newspaper was publishing a weekly series of articles about the sensitive. There I discovered a number of unpublished materials, above all, the unique manuscript, Parapsychological Probing of Prehistorical Cultures: Experiments with Stefan Ossowiecki, from 1937 to 1941. This undoubtedly authentic document contains over 400 pages and 200 drawings describing a wide range of European settlements of Solutrean, Pre-Mousterian, Magdalenian, Kentian, and Aurignacian cultures.

Stefan worked on these experiments with great self-denial under the supervision and direction of Stanislas Poniatowski, professor of prehistory and ethnography at the University of Warsaw, who died in 1945. Ossowiecki was given objects from a museum collection, without information about origin. After 10 to 15 minutes of concentration he gave detailed descriptions, answering questions concerning the objects, sometimes making drawings to accompany descriptions of the artifacts' associations. The sitting usually lasted about an hour. Plans made to publish the manuscript in 1941 aborted because of World War II.

When I discovered this document after its 30 years of oblivion the original analysis and scientific commentary were missing. In August of 1974 I suggested such an analysis be attempted again by the Department of Prehistory of the University of Warsaw. The Department was unaware of the survival of the manuscript or of the great number of psychometric accounts accompanied by artifact descriptions, in spite of damage during the war. Such an analysis, accompanied by work from contemporary sensitives, now seems feasible; some progress is being made in that direction as this chapter is being prepared. In the same manner demonstrated by J. N. Emerson and Jeffrey Goodman in testing clairvoyantly derived hypotheses, various currently tentative archeological models of European cultures could be tested against the paragnostically-derived ones--for example, the lake-dwellers of Biskupin, in Poland, whose dwelling sites have been extensively excavated for the past 25 years.

The Unicorn--And Other Embarassments

Regardless of what telepathic messages Ossowiecki may have relayed from the minds of archeologists who were studying his work, there is no difficulty in finding alternative hypotheses to test. Chapter 29 of the unpublished manuscript, on the Magdalenian culture, departs considerably from what is known about that period, for example, in his description of a cremation and the use of body painting and a minimum of artistic decoration. In another section, on the Asturian culture, there is a very precise description of a unicorn. It is not clear whether this was supposed to have been a description of a myth extant at the time or of a real animal. Thus an exhaustive study is necessary before we can determine the exact nature and value of this text, and its place in the development of intuitive archeology.

But one need not dwell on the unicorn or other extravagant claims to use Ossowiecki's psychometric readings for building models for testing. Parapsychological research in fact suggests that even the best of paragnosts occasionally go astray--and without realizing it themselves. Most of the readings, including this sample one of a Magdalenian arrow head from La Magdeleine Cave, from the Majewski Museum collection, are without great surprises:

> ... is part of a spear. I see ... not houses but a sort of settlement. Round ... very close to one another, so that from above it seems as if green circles on a black background. Wooden logs ... branches in between.... Covered with gray, greenish clay mixed with leaves. Height of the houses ... two and a half [meters] at the most.

Much of this sort of information can be tested by excavation if the right site is found. Some of these data can probably be verified at a distance, for example by archeologists in America who are sufficiently well informed about specific periods Ossowiecki discusses or about particular museum collections he has worked with. It is anticipated that the manuscript will be published in translation very soon [see editor's note 1].

The Anecdotal Evidence in Support of Ossowiecki's Paragnosis

Witnesses relate an unusual story of Stefan's detective abilities associated with the Gordon Bennett Balloon Trophy Races of 1936, in Warsaw. Because of bad weather, one of the balloons strayed and could not be found. Stefan paragnostically located the crew very far north, on a Soviet island in the White Sea. In his vision, moreover, he imagined that he saw a polar bear approaching the crew. Stefan concentrated and imagined that he was mentally preventing the bear from attacking them by withholding panic of the crew. After the persons were rescued, the incident was confirmed: the polar bear had approached, and then left without attack.

A year later, as Professor Manczarski has related to me in personal communication, Ossowiecki psychometrized a metal ball previously held by another person. He correctly gave a detailed report about the person who had "recorded" the metal. However, when the ball was "sterilized" by heating to a particular temperature after being "recorded," Manczarski found that Ossowiecki could no longer psychometrize: the metal no longer carried the information. This, at a later date, triggered a chain of events in my parapsychological group in Paris, and we are presently engaged in selective modification of such recordings by various types of specific energy interactions and radiation. The readings are obtained by Raymond Réant, a remarkable and versatile French sensitive, with whom I am currently investigating other problems in the paraphysical field.

Recent Paragnostications

Raymond Réant is being studied currently in relationship to a wide variety of parapsychological problems, only a few of which relate to archeology. His paragnostic ability, utilizing contemporary material objects of verifiable past, has ranged in accuracy from 90 to 100 percent. We have also registered a wide range of paraphysical effects such as clairvoyant long-distance monitoring of a person's activities and locations, examination of sealed envelopes, identification of material objects, antiques and works of art, direct observation of matter at the subatomic level, thought-photography, etc. Man-plant biological communication was established between Paris and Washington through a Backster-type galvanic skin response system, late in 1974.

Some of Réant's archeological work involves paranormal abilities of primitive peoples, but the most interesting of this psychometrizing seems to have some possible bearing on UFOs. One peculiar stone from the vicinity of the pampas of Jumana-Colorada, Nazca, Peru, provided a particularly striking reading [see editor's note 2]. A description of a site similar to Machu Picchu was first provided. Then, relating more directly to the origin of this particular stone, a description is given of an intelligent humanoid stroking a "loaf of stone" with an instrument producing rays and thus preparing "slices," of which the studied object is one. The egg-shaped stones are artificially produced and their slices are placed at the bottom of aircraft. The flat stones are also used to cover landing strips on the ground. We have been unable to verify even one segment of this psychometric reading--of course, we know that settlements of the Machu Picchu type from the Inca period exist in that vicinity--but this sort of information, aside from its archaeological interest, does dovetail nicely with the work being done by Dr. J. A. Hynek (1972) with the National Aeronautics and Space Administration, the Smithsonian Astrophysical Laboratory in Cambridge, Massachusetts, and the Lindheimer Center at Northwestern University.

In summary, I believe I have provided an overview of the work on two paragnosts which should provoke more interest than laughter from any archeologist who is not beyond developing new interests. Some of the work is beyond our comprehension and possibly quite outside the specialization competencies of many archeologists. But some of it may quite easily be studied even within the framework of present archeological investigations. The archeologist who completely ignores the information supplied by paragnosts will eventually be left behind the general information of his own field and behind the current development of science as a whole.

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Editor's Conclusion

Zbigniew Wolkowski, professor of physics at the University of Paris, has presented some of the most daring views to be found in this volume. While they may be attacked for lack of verification these views may also be held as the potentially most challenging and certainly the most rewarding if verified at some future date. Although the purely archeological aspect of this has not been researched sufficiently to allow assessment of the purely clairvoyant aspects of the paragnosts' work (that is, using double-blind experimentation, by excavation, thus excluding the possible experimenter-paragnosticator telepathy as discussed with respect to Emerson's chapter above). But he has provided more than sufficient paragnostic data for the archeological work to begin. Let us hope that serious American and European archeologists rise to accept this challenge.

Editor's Notes

1. Marek Swida and Z. Wolkowski have held all rights in the Ossowiecki manuscript since 1974. Dr. Wolkowski's address is 94 rue Broca, 75013 Paris, France.

2. This is the "absurdity" referred to earlier. It is a dense, heavy, black oval which looks at a distance like a broad slice of pumpernickel bread, and it is about the same dimensions as such a slice. There are apparently hundreds of them scattered in a small area near the plain at Nazca, Peru, and Dr. Wolkowski has several, which have generously been distributed to some of his archeologist and physicist colleagues in the United States. Of those I saw in Mexico City in 1974, no two were sufficiently alike to appear to be machine-produced, thus suggesting that they are geological formations. However, they are easily split open,

and archeologists with training in geology who viewed the split ones at the same time I did were confounded by them. Although most of Wolkowski's twenty-odd non-parapsychological publications relate to benzene chemistry and nuclear physics, some involve spectrographic analysis of magnetic compounds; hence, if the "slices" were of common alloys or geological formations, Dr. Wolkowski himself would presumably have deduced that by now. The editor takes a dim view of most current archeology-and-UFO work while, at the same time, he grants that evidence for the existence of UFOs now seems fairly overwhelming. If archeologists are to get into the UFO business in a serious way, then perhaps one way of eliminating a whole host of false leads is to employ the services of a paragnost.

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PSYCHIC ARCHEOLOGY: METHODOLOGY AND EMPIRICAL EVIDENCE FROM FLAGSTAFF, ARIZONA

Jeffrey D. Goodman

Editor's Comments

Archeological "map dowsing" can be set in a neutral context, as simply providing one of many hypotheses to be tested, since an unexcavated site constitutes a near-perfect double blind experiment. If statistical probabilities are sufficiently high against psychic predictions, then a satisfactory test of the hypothesis as a result of actual excavations would seem to provide a tentative proof.

Jeffrey Goodman's work superbly illustrates this point. With the help of a trance sensitive in Oregon who worked on various maps by letters and tape recordings, Goodman pinpointed a location of what this psychic, in trance, claimed was "a very old site." Upon arriving at the site with archeologists from that area, Goodman was forced to admit that the location was not only a very unlikely one for a site but that, being at the interface of igneous, sedementary, and metamorphic deposits, some of which were recent, an Early Man site would not be found in the general area.

Defying this lack of hope, he excavated a few feet. "As predicted, 1) crude stone tools from four to 20 feet were found, 2) a geologic disconformity occurred at the 15 foot level, and 3) a minimum date of 20, 000 years ... " was supported by radiocarbon dating of approximately 23, 000 B. C., thus making it one of the oldest fully documented sites in America. Excavations have now revealed a probable date of around 100, 000 B. C. at 21 feet, and a well-cut blade has recently been taken at the 28-foot level.

Considering the millions of cubic yards of earth excavated for cities, dams, roads, and the search for America's "oldest man" in the past 30 years, this event seems of high importance. Regardless of how one states it, the odds against the predictions' being accurate about the location of the site alone were very high. In sum, the psychic hypothesis would seem to be correct.

Where do we go from here? Popular writers have recently set forth many improbable and completely untested hypotheses about the psychic predictions (or dreams?) about a whole host of lost continents, the populating of Earth by extraterrestrial humanoids, and other fanciful matters relating to so-called archeological "puzzles" (for which there are in most cases already quite logical and well tested archeological explanations). The scientific archeologist is unlikely to whole-heartedly embrace a psychic archeology which promises everything but tests nothing.

Goodman's archeology, by contrast to pop archeology, postulates nothing outside the normal bounds of archeology. Rather, it utilizes and tests a paranormal methodology in order to expedite the search for prehistoric remains which many archeologists had already expected eventually to discover.

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Introduction: Psychical Hypotheses in Archeology

> What determines the soundness of a hypothesis is not the way it is arrived at (it may have been suggested by a dream or a hallucination) but the way it stands up when tested, i. e., when confronted with relevant observational data [Hemple 1965: 6].

Hypotheses based on information obtained from psychic sources offer archeology a neglected but potentially powerful methodology for discovering cultures of the past, reconstructing them accurately, and explaining the relative significance of recovered artifacts within that culture.

It should be noted and clearly understood that although controversy may still surround the nature of the source of psychically-derived data, this controversy has no bearing on the validity of information obtained from excavations based upon them.

For the archeologist the questions to be faced are: (1) can sites be located through such sources? (2) will the sites provide artifacts in the positions and of the nature described by the psychic? and (3) will the explanation of both site and excavated material provide a hypothesis which can later be tested? It is, after all, essentially irrelevant to the archeologist and his discipline where the sensitive gets his information. The prediction of the positioning of artifacts at a site after thousands of years of oblivion perhaps offers the most perfect double blind for the parapsychologist.

Let us deal with one final question before undertaking an examination of the Flagstaff site and the development of an intuitive methodology, because this question needs to be clearly separated from any arguments either for or against paragnostic data and intuitive research techniques. I speak of the fact that archeology is a troubled science. Many of archeology's publications, seminars, and conferences carry an undercurrent of growing discontent with the established order and its assumed, but yet untested, key axioms.

The indications of this sense of discontent, and the sense of inadequacy which is its corrollary, include sharp critiques of archeological methods by professionals of standing both within and outside of the profession (Bayard 1969; Chaney and Revilla 1969; Fritz and Plog 1970; Johnson 1972; Stanislawski 1973), the growing and increasingly hostile fractionalization of the field (Flannery 1973), and arguments over the need to make present methods relevant, which are driven by the failure of current techniques to provide an accurate and adequate reconstruction of past cultures (Flannery 1973 versus Fritz and Plog 1970).

We face a distressing symptomatic pattern and one all the more ominous because it seems to conform with the outlines of a science going into crisis as described by Kuhn (1962) in his book, The Structure of Scientific Revolutions. Kuhn presents the proposition that growing discontent, when coupled with new anomalies within a scientific discipline, can lead to a crisis situation which is alleviated only by major change. His historical studies show that the most positive response to such crises has been "extraordinary research"; research leading to a new paradigm.

Obviously two inferences can be drawn from Kuhn's proposition. First, if archeology is indeed in or approaching crisis it must accept new "extraordinary research." Second, the intuitive methodology may offer just the "extraordinary research" needed to allow archeology to become a dynamic and growing science.

If, as seems indicated, this new methodology provides a scientific rigor greater than more traditional methodologies (Fritz and Plog 1970: 409), then the archeologist will be freed from the artificially restricting axiom of uniformitarianism in his cultural reconstructions (Sanders and Price 1968: 221). Were all the processes of the past really exactly like those of the present? With the intuitive methodology, the field will be able to go beyond mere recombinations of existing ethnographies, the archeological literature, and our present generalizations about society, approaches which all too often have proven to be inadequate or in error (Shiffer 1972: 221; Johnson 1972: 366).

This new methodology may also resolve the conflict over whether excavated remains are automatically to be considered significant. It should also settle the apparently doubtful proposition as to whether an archeologist can make simple one-to-one functional or structural relationships between material, social and ideological systems (Chaney and Revilla 1969; Johnson 1972; Bayard 1969; Lang and Rydberg 1972).

It was from this perspective that I began by initial research involving Flagstaff and the other experiments which I will describe.

Procedure

In the spring of 1971, a psychic, whom we shall call Aron, said he could locate sites. He was asked to do so. Aron is an aerospace engineer who has no training or specific knowledge of either archeology or anthropology beyond what one might assume of an educated layman. He has mastered a form of trance state and has been giving what he calls "readings" for several years.

After he had entered his trance state his wife gave him my suggestion to locate a new "early man" site in the southwestern United States. I was not present. He was also asked to give a behavioral hypothesis concerning the former occupants of the site) which could be tested. Finally, he was asked to give a detailed geologic reconstruction.

Aron's responses were tape recorded by his wife in their home in Oregon and then sent to me through the mails. Upon receipt of the tapes, I had a verbatim transcription prepared which was then distributed to a number of respected academicians.

Examination of the answers to my questions showed that Aron had selected an area which had never been considered likely to have such a site. He had chosen a location in the San Francisco Peaks, outside of Flagstaff, Arizona, and described it as having had a very long and a very old occupational sequence. He had also responded, in considerable detail, to the questions about a geologic reconstruction. He had indicated a complex history involving igneous intrusion, faulting, volcanic activity, glacial activity, and water deposition.

During the following summer, I located and field checked the area referred to in Aron's reading and determined that, at least, his surface description was accurate. Upon returning to Tucson, I began a library search to determine whether his geologic reconstruction was also correct. It was!

In the late fall of 1971, I returned to the location and, based on additional specific directions given by Aron, had two small and shallow pits dug to test the accuracy of his archeological hypothesis. He had indicated that artifacts would be almost immediately discovered. They were!

When this validation of his information was considered along with the consistent pattern of success I have already described, it was clear that further field work was warranted. I began preparations for a total excavation which would begin in the summer of 1972. However, these plans were quickly stymied because I was unable to obtain the permits necessary to begin such a dig. I received indications that the permits were denied because of the controversial nature of the project.

Thwarted from continuing on this front, but convinced that the use of psychically-derived data might constitute a new and genuine methodology, I began exploring alternative testing techniques. In the spring of 1973, while completing graduate work in anthropology at the University of Arizona, I designed a series of controlled pilot experiments and work sessions for testing Aron's abilities. Dr. Cecil Rogers, a statistician and a professor in the Psychology Department at the University (and in 1976, chairman of the Department of Psychology at the University of Georgia), aided me in the design of these experiments and agreed to serve as test statistician.

A test series with two aims was planned. First, we sought to gain some understanding of the objective and subjective factors affecting Aron's ability, as well as some insight into the scope of his psychic perception. Second, we wanted to determine whether Aron's ability could be developed through usage and by giving him positive reinforcement in the form of acknowledged success.

The sessions were all conducted while I was in Tucson and Aron was in Oregon. Questions were mailed to Aron asking him to locate, identify, and discuss artifacts buried under controlled conditions in my yard and in a number of fields in the areas surrounding Tucson. To avoid the obvious implication that nothing more than telepathy was at work, Aron was also closely questioned about the detailed positioning of the buried objects--objects which had been simply dropped into a hole and then recovered with earth. Their exact positioning was unknown; only excavation could determine whether Aron had been accurate.

Five separate sessions were held with Aron taping his answers and then mailing them to us. Responses went beyond simple location and identification; for example he (1) gave the correct genus and species of a seed, (2) correctly named specific types of human bones, and (3) correctly delineated the age and sex of human skeletal material. In all, Aron consistently gave significant responses with accuracy running as high as 90 percent in some instances. Accuracy was found to improve both during a single test and over the course of a series of tests.

The test structure showed that Aron definitely was affected by a variety of subjective physical and psychological factors. Although we were not able in these early tests to work out a defensible factor of certainty--a correlation statistic--largely because of logistical problems, it was observed that when Aron felt "well" and "relaxed" he seemed to do better and to be more definite in his answers.

One other area which needs to be considered is the communications barrier, since it presents the major stumbling block to developing an intuitive methodology--that is, the developing of a mutually understood working vocabulary. Aron is a layman, at least as far as archeology or anthropology is concerned; consequently, his answers are phrased largely in a framework consistent with his mind. Even when, for some as yet unknown reason, he seemed to have access to a vocabulary which would not normally be his own, in the early sessions it was hard to be certain that the words meant the same thing to both of us. Gradually, through a sort of subtle compromise, I began to understand (when Aron gave a location, a positioning relative to a known point, or a description) exactly what he meant; he seemed to undergo a similar educative process.

Based on the success of these controlled tests, we again applied for a digging permit and this time were at least partially successful; we received a "compromise" permit, and planned to begin digging in the summer of 1973.

In the spring of 1973, after receiving the permit, but before beginning the actual dig, Aron was asked for additional and even more specific predictions for the planned ten-foot-

(cont. on p. 322)

Table 1. General hypothesized findings based on psychic predictions.

Depth (ft.)	Time: Years Before Present (B. P.)	Geological Features	Archeological Materials	Cultural Traits
0				
	2, 000-3, 000	Sandy loam with boulders; alluvium	None	No occupation at site
4				
	5, 000-7, 000	As above, with many boulders; platty basalt; dacite and basalt boulders; loams and sandstone boulders; rotten igneous material; granite compound; material with sharp edges.	Tools: 10-15 of chipped stone, size range 1/2 to 6 inches; color: mostly dark; some with glassy sheen; some of obsidian; includes sharp edged cutting tools; hammerstones; wood: some pieces-handle remnants.	Seasonal (summer) occupation; low cultural level; (declining culture).
7				
	9, 000-10, 000	Silt; sand and loamy oil (from presence of water).	Tools: 12-18 and similar to above; 30-40 potsherds; 1 piece of cotton fabric.	Permanent occupation; trade centers, on trade route; ceremonial activity; low cultural level (declining culture).
12				

12				
	20, 000	Same as 4-8 foot level (above), but with fewer boulders.	Tools: 4 ground stone; 2-3 chipped, obsidian; 10-12 potsherds; 5 pieces cotton; domesticated seeds: corn, rye wheat (10-12 seeds of each type; water flotation recovery done on selective basis).	Permanent occupation; specific religious philosophy (priesthood?); medium cultural level (declining culture).
	Not dated.	Disconformity.		No data.
15				
	72, 000	Compacted soil (paleosol).	Wood; some stones with highly glassy surfaces, obsidian (most materials in this cluster from 15-20 foot level).	Permanent occupation of long standing; medium cultural level; declining culture.
20				
	100, 000+	As 15-20 foot level (above); glacial activity and disturbance; area much flatter, with brooks.	Human skeletal materials (three different individuals) of Homo sapiens; animal skeletal material; horse (pony, domesticated); some wood.	Permanent long standing occupation; trading center and residence; had writing; lived in peace without fear; Atlantean; contributed to Olmec/Mayan, Incan, & Hopi cultural complexes

square shaft, to be dug 23 feet in depth. This new information was intended to clarify and support the material already received from him in the earlier 1971 tapes. Like the first series, this second set of tapes dealt with archeological, chronological, and geological details of the site and the surrounding area (Table 1).

As a control, the predictions of several archeology professors from another institution, all of whom were familiar with the area, were recorded. They vouchsafed that this was the first known deep subsurface excavation in the area, and stated that they felt the location of artifacts as predicted by Aron was very unlikely.

Excavation was begun in June 1973 and carried out until November of the same year when funds ran out. Digging assistance came from anthropology students and amateurs working under my direction. The 23-foot shaft was not completed, but did reach an overall depth of 15 feet with one corner quarter dug to 20 feet. Dynamite, air hammers, and double jacking were all used to pass through some of the larger boulder material. Work was done by shovel with all material being screened; again, because of financial considerations, trowel work was done only occasionally.

As predicted, (1) crude stone tools from four to 20 feet were found, (2) a geologic disconformity occurred at the 15-foot level and (3) a minimum date of 20,000 years at the 15-foot level was supported by radiocarbon dating. Teledyne isotopes gives a radiocarbon date (I-7519) for that level as 25,470± 1700 B.P. This is a minimum age, as humic acids were not removed. This date agrees with the geological age indication for this level as determined by United States Geological Survey geologists who have studied the area.

Pottery shards and one piece of fabric were predicted for the seven-to-12-foot zone but were not encountered. It is possible that this is not so much an error of excavation as of psychic measurement since shards and fabric are also predicted for deeper levels. It is also conceivable that this was a case of mistaken identification of an object (e.g., one "worked" piece of wood found at the depth predicted, was incorrectly described as being a "handle"). Only further excavation will settle these matters.

Certain predictions that were made remain untested because of the incomplete excavation of the site. These

Table 2. Tabulation of the success (+) of psychic prediction based on (conservatively judged) accuracy following excavations

Key:
(+) correct: complete agreement between psychic and result.
(0) major excavated feature/artifact not predicted by psychic.
(-) slight or total disagreement: psychic prediction not verified.
n. e. no excavation.

Depth (ft.)	Psychic's Geo-Chronological Predictions re Excavations	
1-4	sandy loam	(+)
	boulders	(+)
	alluvium	(+)
4-8	sandy loam	(+)
	boulders	(+)
	more boulders than above	(+)
	alluvium	(+)
	platty basalt	(+)
	dacite boulders	(+)
	basalt boulders	(+)
	lims boulders	(+)
	ss boulders	(+)
	rotten igneous material	(+)
	igneous material w/ granitic composition	(+)
	material with sharp edges	(+)
8-9	loamy soil	(+)
	water deposition	(+)
	lime cement	(0)
	sand	(+)
	silt	(+)
9-15	sandy loam	(+)
	boulders	(+)
	fewer boulders than 4'-8' zone	(+)
	alluvium	(+)
	gravel	(0)
	platty basalt	(+)
	dacite boulders	(+)
	basalt boulders	(+)
	lims boulders	(+)
	igneous material w/ granitic composition	(+)
	material with sharp edges	(+)
15	disconformity	(+)
	minimum date 20,000 B.P.	(+)
15-20	paleosol	(+)
20-23	paleosol	(+)

Depth (ft.)	Psychic's Archeological Predictions re Findings from Excavations	
1-4	no artifacts	(+)
4-7	stone tools	(+)
	chipped stone tools	(+)
	obsidian tools	(-)
	wood	(+)
	handle remnants	(-)
	10-15 chipped stone tools	(+)
	tools size range 1/2"-6"	(+)
	cutting tools	(+)
	hammerstone	(+)
7-12	stone tools	(+)
	chipped stone tools	(+)
	more tools than 4-7' zone	(+)
	potsherds	(-)
	fabric	(-)
	obsidian tools	(-)
	cutting tools	(+)
	hammerstone	(+)
	tool size range 1/2"-6"	(+)
12-20	stone tools	(+)
	chipped stone tools	(+)
	some obsidian stones ("Apache tears")	(+)
	wood	(+)
	ground stone	n. e.
	fewer stone tools than above	n. e.
	obsidian tools	n. e.
	potsherds	n. e.
	fabric	n. e.
	domestic seeds	n. e.
	handle remnants	n. e.
	most of artifacts in 15-20'	n. e.
20-23	human skeletal material	n. e.
	animal skeletal material	n. e.
	wood	n. e.

Table 3. Scoring of correct psychic predictions according to tabulations in Table 2

		Possible	Right†	Wrong†	Omitted	Success	X^2 (2d f.)	Level of significance
Conservative Scoring	geological	35	33	-	2	94%		
	archeological	23	18	5	-	78%		
	chronological	1	1	-	-	100%		
	total	59	52	5	2	88%	1.20	.55
Favorable Scoring	geological	35	33	-	-	100%		
	archeological	23	18	5	-	78%		
	chronological	1	1	-	-	100%		
	total	59	52	5	-	91%	1.087	.60

†The reason for the difference in right and wrong scoring between the conservative and the favorable test is that items left out in the geological predictions were not counted as wrong in the favorable test. In the favorable test X^2 was computed as "predicted" = right and wrong and "observed" = right, which is the usual way of computing X^2.

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include the presence of human biological material, and the use of specific domesticated vegetal material. It should be noted that the potential presence of human skeletal material was the rationale for picking this particular ten-foot-square excavation zone over all others.

Interpretation

The statistical results to date have yielded an 88 percent probability of success on predictions where, under the conservative chi-square statistic, the difference between the predictions and the observations would occur by chance 55 percent of the time (i.e., 55 percent level of significance--see Tables 2 and 3). The fact that such figures are possible is in my estimation almost as important as the figures themselves. This is the first archeological hypothesis explicit enough to be measured by the chi-square method, especially where the results have been positive enough to call for acceptance of the hypothesis.

This level of success is all the more impressive when measured against the "fruitless" predictions of the archeologists who served as controls. It was their feeling that *the site should not be dug in the first place* and that once dug, they would have abandoned it prematurely because the first four feet were sterile of artifacts at this particular excavation location.

Thus, at the very least, we must credit a psychically-derived model with correctly locating a site inconsistent with the traditional model, correctly predicting the key geological and archeological contents, and discovering a new early man site of major importance. With this discovery more unimpeachable evidence of man's presence in the New World at dates earlier than 25, 000 B. P. (Before Present) is presented.

But I would like to suggest that we also have much more. We have a new methodology for hypothesis generation and an entirely new paradigm for archeology. Instead of the traditional archeological paradigm, by which hypotheses are generated from the excavated artifacts, we now have an intuitive paradigm in which the dig serves only to test intuitively-derived hypotheses, thus avoiding the pitfall of circular reasoning.

In this intuitive paradigm the fact that the material record is poorly preserved and incomplete is no longer an impediment to the reconstruction of social and ideological system. Instead, the material record is taken as a random test sample.

Within the intuitive paradigm the more relevant aspects of a past people, their thoughts, beliefs, and attitudes, are no more destroyed than their pots and stone tools.

The challenge is clear; if we can establish a statistically significant relationship between the psychic's observations and the archeologist's recovered artifacts, than an impeccable intuitive methodology has been created (Tart 1972).

This gives us a new type of conditional validation for cultural reconstruction. One which leads to an *entire new record* of the past.

In light of our acknowledged place at a crossroads, it seems inimical to our own future as a science to ignore such material because of controversy as to its source.

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Editor's Conclusion

I am informed that archeological dowsing is commonly used in Europe, without people's raising the question of the "source" of the paragnostic information or without mention of the dowsing in published site reports. But it is exceedingly rare in America, and this rather unusual case suggests that, regardless of whether this is to be explained as a type of "sifting telepathy" (the only instructions given were to find a very ancient site in the Southwest, which includes a great many square miles to read--"sift through"--clairvoyantly), or as communication with the dead, it would seem to present us with a technique which no budget-oriented excavator could afford to pass up.

This does not represent a practice unique to Goodman and Emerson. Weiant (1960: 1-8) utilized it in George Vaillant's work for the National Geographic-Smithsonian excavation of Tres Zapotes in Mexico. It is perhaps of passing interest to note that Dr. Weiant presented this material under the title "Parapsychology and Anthropology" at the annual meeting of the American Anthropological Association in Mexico City in 1959. It was only after I organized the Association symposium by that same title for Mexico City in 1974 that this coincidence was discovered. So far as we are aware, no similar papers were presented to the Association in the intervening period or prior to 1959.

As with others, Part VI raises more questions than it answers and is therefore difficult to summarize. Although we can attach names--psychic archeology, telemetry, dowsing--to different subjects covered, these are descriptive terms for archeological methods and not for paranormal events. The simplest explanation for some of Goodman's work and for the "map dowsing" of Emerson's sensitives is that it is a form of remote-sensing clairvoyance, but many of the other results fail to provide even a clue as to how they are brought about.

Perhaps the most significant element to observe in the archeological psi work, aside from the potential for inexpensively determining the central locations of undiscovered or unexcavated sites, is the fact that much of the psychic archeology automatically sets up double-blind psi experiments. In some cases coincidence will explain many of the positive results, but in those such as Goodman's, where there is virtually no logical hope of a location of a village at the predicted site, excavation may have all the scientific impact of a highly tedious and lengthy series run on ESP cards. With much of the information, such as the paragnostic information on the Magdalenian Culture as reported by Wolkowski, verification of predictions may not be possible for years--or centuries. But at the same time, we may use the psychic predictions to construct working hypotheses and, if lucky like Emerson, we may quickly if accidentally run across confirmatory information such as that for the argillite carving.

Archeology changes rapidly. Within the decade from 1945 to 1955 the accepted date for entry of Indians into the New World changed by nearly 40,000 years, or by a factor of 10 (it has remained for considerable further work over the past two decades to establish the veracity of the earlier date). Presumably some radical changes may erupt as the result of psychic archeology much more rapidly than seems possible now, from this temporal vantage point.

Whatever may come from psychic archeology, it is likely eventually to have two profound results: (1) an expansion of our understanding of paranormal phenomena which have previously not been observable by double-blind experimentation, and (2) an expansion of our knowledge about the more socially relevant dynamics present at archeological sites at the times when they are originally occupied.

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Part VII

Parapsychology and Anthropology: An Overview

PARANTHROPOLOGY: A NATIVITY CELEBRATION AND A COMMUNION COMMENTARY

Roger W. Wescott

Editor's Comments

Parapsychology has anpsi (animal psi) and a good many other queer terms. Some parapsychologists have been revolted by the term paranthropology which Wescott has coined and which very nearly became the title of this book. I too have misgivings about the term: the fact that the related terms, parapsychology and paranormal, imply that psi is not a natural thing (and therefore must be preternatural) may well be the cognitive basis for the refusal of so many scientists to consider parapsychology as a serious matter for so long. But even with these misgivings, I have retained Wescott's chapter as well as his title.

The chapter was prepared in 1975 as an extended critique of the Rhine-Swanton Interdisciplinary Symposium on Parapsychology and Anthropology of the annual meeting of the American Anthropological Association in Mexico City, November 1974. Therefore it relates to only about half of the authors here, and then only to the main points of their original short papers prepared for public presentation. It does not delve into their more extended analyses prepared for this volume. Although not specifically oriented to the book's theme of ecological concepts, this chapter provides some perceptive observations about the interrelationships between parapsychology and other fields such as anthropology, physics, psychology, and biology. This is in keeping with the title of the original symposium, the interdisciplinary and holistic thrust of this volume, and the direction in which the study of psi in its anthropological context must go.

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Socrates defined a philosopher as an intellectual midwife. If he is right, then Joseph Long must be formally recognized as the philosophic founder of the emergent subdiscipline of parapsychological anthropology. For it was Long who brought together an outstanding group of theorists (from psychology and anthropology) and practitioners (of medicine and engineering) to give birth to this fascinating field of investigation.

New enterprises demand new forms of expression. Since the phrase "parapsychological anthropology" is unwieldy and bids fair to become tedious, I propose that our fledgling endeavor be christened "paranthropology." A few paleoanthropologists, to be sure, might momentarily and mistakenly assume that this coinage refers to the study of the early African hominid, _Paranthropus_. In view, however, of the fact that most physical anthropologists and human paleontologists have now renounced the term _Paranthropus_ in favor of the phrase _Australopithecus robustus_, I think this nomenclatural hazard so minimal that it may safely be disregarded.

Culture As Hypnosis

There are, of course, many reasons why anthropologists may continue to avoid the nascent area of paranthropology, even after its official Mexican baptism. Besides the well-known aversive reactions associated with mechanistic and materialistic philosophies, many anthropologists may feel that the effort of beginning to locate and collect novel and untouched data is simply too great, especially when there are so many readily available data which require only collation and publication. But this objection, I think, has been rendered spurious by Jule Eisenbud, who points out that anthropologists do not need to search for psi materials in preliterate and non-Western cultures. All they need do is make adequate use of the abundant materials available in publications, field-notes, and living societies around the world. The main reason why they have not done so to date has to do with a general property of culture: namely that, psychodynamically speaking, it constitutes mutual hypnosis. By this I mean that culture is, in large part, a device for focusing some perceptions by screening out others and that, to maintain the culture-screen, individuals need to work actively and constantly, albeit unconsciously, to help one another maintain prescribed blindnesses, lest forbidden perceptions break through the screen and (in the phraseology of several East Asian societies) "make the world tip." In the case of Western culture, and especially of its scholarly subculture, one form which this hypnosis takes is that of helping, if not pressuring, one another to blunt or ignore our own psychic abilities and to interpret apparent psychic gifts among other peoples as illusory.

Eisenbud is probably right that, psychoanalytically speaking, our scientistic denial of psi--which seems anxious to the point of desperate--represents a deep fear of the potential misuse of paranormal powers for destructive purposes. More precisely, he suggests that a psychokinetically efficacious death-wish is the most dreaded of psi faculties and the one most likely to arouse profound guilt feelings in those who even faintly suspect its operation within themselves. The plausibility of his surmise is enhanced by the otherwise inexplicable outbreak of witchcraft hysteria in Europe during the Renaissance, a period which we customarily think of as preeminently liberal, in contrast to the restrictive ethos of the Medieval period. Renaissance witchcraft becomes comprehensible, I think, when we reflect that liberalism implies at least relative permissiveness and that permissiveness, in turn, liberates not only the rational and the constructive but also the irrational and the destructive. One of the paranormal powers released in the Renaissance "culture thaw" was probably witchcraft, or the capacity to inflict harm without physical intermediation.

What I infer from Eisenbud's perceptive discussion of the uneasy relation between Western science and psi is that science, in its narrowest sense at least, constitutes an act of intellectual self-separation from cosmic reality, to the point where the non-analytic aspects of reality are held to be at best trivial and at worst non-existent. Rephrased in the metaphorical terms of a neo-Freudian "family romance," this insight amounts of a recognition of the fact that Scientific Man has divorced himself not only from the paternally supernatural but also from the maternally natural. Our filial piety toward Mother Nature, as expressed through science, seems confined to a reverence for the "hard" facts on her ritually preserved skeletal parts and devoid of the "soft" intimations that comprise her living substance. Here, I should say, Eisenbud stands in the tradition of Goethe, who, speaking at once as a poet and as naturalist, wrote

> Gray, my dear friend, is all our theory--
> But green the golden tree of life.

Psi-ence and Science

Employing a terminological contrast borrowed from structural linguistics (and abstracted by Marvin Harris), Agehananda Bharati holds that what we may call psi-ence is emic, while science is etic [see pages 15, 16]. By this he clearly means that psi events are subjective phenomena, perceptible to some observers but not others, while non-psi events are objective phenomena, perceptible to all.

Ironically, however, it is possible, even in the terms of structural linguistics--which is the linguistic equivalent of behavioristic psychology--to invert this contrast. For, at least within any given speech community, phonemes are operational realities, while phones (speech sounds considered as physical events) are not. That is to say, replacement of one phoneme by another is usually responded to by native speakers of a language as a change in form and, consequently, as a change in meaning; whereas replacement of one phone by another (within the ambit of a single phoneme) normally goes unnoticed.

From the standpoint of a pragmatic philosophy of science like Percy Bridgman's Operationalism, therefore, it is the emic rather than the etic which is "real"--within the functional context of any one particular language.

Ultimately, however, from an ontological standpoint, any sharp dichotomization of experience into real and unreal is simplistic. Reality is probably a gradient rather than a discrete phenomenon. Implicitly, at least, we concede as much when we describe some impressions as "so real" and others as "slightly unreal."

Moreover, realities may differ not only in degree but also in kind. Conventionally, again, we speak of abstractions like truth as though they were just as real as concretions like trees and of collectivities like mankind as though they were as palpable as individual entities like a man. Yet we do so, in most cases, without implying or inferring that the realities in all these cases are of the same sort. Reality, in short, seems to be a complex and subtle property of experience and one that is unlikely to yield satisfactorily to a gross all-or-none type of analysis.

This is not to say that all paranthropological phenomena must be assessed in analogic rather than in digital terms. To return to structural linguistics, phonology, if it is to be a complete and balanced study of human speech-sounds, must subsume both phonetics, which is a more-or-less type of description, and phonemics, which is a yes-or-no type of description; and similarly complementary descriptions of human behavior may reasonably be expected in any social science discipline or subdiscipline that aspires to be more than one-sided.

Quantum Paranthropology

Perhaps, indeed, this expectation should be extended to every science, whether or not our own species is its subject matter. Physicists, for example, have come to accept an analysis of light as something simultaneously undular, or continuous, and corpuscular, or discontinuous. So we are hardly surprised to find paraphysicist Evan Walker applying quantum theory to psi in such a way as to account for discontinuous events like translocation (or teleportation) as well as accepting continuous events like deliberate (or poltergeist-less) psychokinesis.

Sanctity as Radiation

For years anthropologist--or, as he preferred to call himself, "culturologist"--Leslie White, in his discussions of what he considered to be the uniquely human faculty of "symboling," has maintained that all that distinguishes so-called holy water from ordinary water is the verbal and liturgical symbolism applied to the former which is not applied to the latter. But James Beal has now given us hard data, based on instrumented experimentation, suggesting that the crucial difference between sacred and secular substances, including water, may be radiative in nature and quite unaffected by locutions as such. If he was right, we may henceforth have to classify such substances as water in terms of not just two but four categories as regards the polarity of the sacred and the profane:

> water which is both radiatively and symbolically sanctified.
>
> water which is radiatively but not symbolically sanctified.
>
> water which is symbolically but not radiatively sanctified.
>
> water which is neither radiatively nor symbolically sanctified.

Sex and Psi

Robert Van de Castle's studies of aboriginal American cryptesthesia are a standing reproach to ethnographers, who ought long ago to have initiated such studies themselves. All of his findings are valuable, and most of them suggest, not surprisingly, that emotionally expressive individuals exhibit more psi perceptivity than do emotionally inhibited individuals. One of his findings, however--that young women were consistently superior percipients--is ambiguous as regards interpretation. It might suggest that young people are more clairvoyant than old people or females than males. From his presentation, I inferred that Van de Castle himself interpreted this apparent psi superiority as an indirect result of the generally greater emotional expressiveness of women than of men. A fourth possibility that occurs to me is the effect of sexual polarity--that a male interviewer is more likely to elicit emotional response from female than from male subjects.

Sollertial Circles?

Alexander Randall's "sapiential circle" is an exciting idea which will, I hope, be implemented on an ever-expanding scale. As a member of that maverick breed of visionaries called futurists, I am of course already committed to the increasing use of a range of mind-stretching exercises with such names as "brainstorming," "cross-impact analysis," and "the Delphi Technique." Yet, as a sometime historian, I am also aware of the paradoxical fact that futurism is an ancient if fragile tradition in the Western world and that the profession of the inventor is itself perhaps the most important single invention of the Industrial Revolution.

These considerations, in turn, remind me that Randall has, by implication at least, put his finger on yet another paradox--the contradictory nature of culture itself. Culture, as most ethnologists are uncomfortably aware, must be simultaneously conservative and innovative. For, if it does not conserve, it cannot be continued from one generation to the next; yet, if it does not innovate, it will not change. And it is obvious that cultures in general undergo both continuation and change.

The reason why cultural continuation and cultural change proceed simultaneously may be a third paradox--what paleontologists call "Romer's Rule," in accordance with which a major cause of speciative change is organisms' unsuccessful efforts to preserve the ecological status quo and their own adaptation to it. In cultural terms, Romer's Rule would amount to a recognition of the fact that human beings, because they are unable wholly to duplicate the culture they receive, alter it in spite of themselves. If culture does in fact develop in this perverse manner, then Randall's plea, as I understand it, becomes in effect an exhortation to Space Age man to replace involuntary with voluntary innovation and therewith to substitute responsible awareness for irresponsible blindness in our passage from the past to the future.

Here a terminological problem occurs to me. The polarity of preservation and innovation in culture generally is matched by the polarity of wisdom and ingenuity in intellectual life specifically, wisdom being the preservative faculty and ingenuity the innovative one. Since "sapiential" means "pertaining to wisdom" and so refers to the preservative rather than to the innovative faculty of the mind, it seems ill-suited to Randall's innovative intent. In Latin, the word for cleverness, ingenuity, or invention was sollertia. For a group that is innovative rather than preservative in aim, therefore, I suggest the substitute phrase "sollertial circle."

Language and Psi

Walter Greist's contention that language enhances psi is at first blush startling, since it runs implicitly if not explicitly counter to the wide-spread clinical finding that exceptionally articulate patients more often use verbalisms to resist insight than to induce it. It must be admitted, however, that discussion, description, and investigation of psi would be almost insuperably difficult in the absence of language. And it is undeniable that some communicative processes, such as speech and kinesic behavior, operate in a complementary rather than a mutually exclusive manner. Greist, I am sure, would say that language and psi not only complement but reinforce one another.

The kind of hyperverbal activity engaged in by grammarians and logicians certainly seems to me to be psi-suppressive. Yet I must concede that both non-Aristotelian logic and transformational grammar appear to represent intellectual leaps of the kind we more often associate with sudden insight than with step-by-step verbal reasoning. In sum, I am inclined to leave open the question of the relation of language to psi, hoping that Greist himself may supply us with more copious and convincing data for positive correlation between them than he has thus far done.

The Play of the Mind

J. Norman Emerson's "intuitive archeology" is a welcome, if overdue, addition to our armamentarium of prehistoric research. The surprising 80 percent accuracy of archeological dowsers and psychometrizers gives promise of a flood of successful new exhumations and identifications.

As an advocate of the holistic and the interdisciplinary, I am naturally gratified by Emerson's acknowledgment of intellectual indebtedness to the late Wilhelm Reich, whose cosmic bioenergetics provided a unified field theory for the investigations of non-electrical energies begun by Anton

Mesmer and Carl von Reichenbach in the 18th and 19th centuries. The intellectually irrelevant fact that Reich died in prison has apparently led many otherwise adventurous investigators to minimize or ignore even those aspects of his bioenergetic research which are most relevant to their own interests and concerns.

One of my few cavils with Emerson has to do with his use of the word "fortuitous" to mean "wholly undetermined." Quite apart from Jung's notion of "sychronicity" (which may well prove valid), I should say that there is no such thing as a totally fortuitous event. Putting the matter differently, it can be said that, while every event is accidental in some sense, none is accidental in every sense. A human mishap, for instance, that seems to be psychosocially unpredictable may be, at the same time, physiochemically predictable in the sense that, given the material substances and forces involved, the mishap is inevitable. Fortuitousness and determinedness, in short, are probably functions rather of our frames of reference than of the nature of the universe.

Emerson concludes his engaging presentation with an admission that his initial interest in psychic archeology had been merely playful but with a subsequent assurance that his current interest is serious indeed. While appreciating and sharing his commitment to intuitive method, I feel that no apology was or is necessary for the ludic component of his approach to prehistory. From Nietzsche's "game of creation" to Havelock Ellis' "dance of life," the most sensitive scholarly thinking, I believe, has treated the playful and the serious as complementary rather than as contradictory aspects of profound and productive involvement in the life of the spirit. Whatever our metaphysic may be and whatever place in it psi may have, each of us is in some sense deeply devoted to the play of the mind.

Archeological Dowsing

Emerson's approach to archeology is applied with zeal by Jeffrey Goodman, who asserts, in solidly pragmatic fashion, that the proof of any prehistorian's pudding is in the eating: if psychics can locate more buried artifacts in less time than can more orthodox theorists by more rational methods, so much the better for them and so much the worse for their counterproductive detractors. Oil companies, after all, which are nothing if not pragmatic, hire dowsers as well as engineers--and profit handsomely from water-witching. Should scholars, then, deliberately deprive themselves of an exhumatory bonanza merely because they cannot yet explain the means by which they obtain it?

Less than Psychic, Less than Human?

Zbigniew Wolkowski's study of Stefan Ossowiecki is a salutary reminder that "intuitive archeology" is no more a creation of the current generation than are descriptions of unidentified aerial phenomena. The facts that Ossowiecki envisioned a Magdalenian complex at variance with the reconstruction currently in favor and that his prehistoric fauna includes at least one animal now regarded as mythical need not, I think, deter us from pursuing paragnostic methods. If there is a truism in intellectual history, it is that the solid facts of one age are the evanescent superstitions of the next. Wolkowski's concluding assertion that those who are less than psychic are less than completely human is, I think, less extravagant than it at first appears. At any rate, I would concur that psychic gifts enhance one's humanity in a manner comparable to that in which artistic gifts or interpersonal skills do.

Shamanism, Literate and Preliterate

In the paragraphs that follow, I shall be responding not to individual symposiasts but to the symposium as a whole and commenting on what I see as its implications.

For anthropology as a discipline, psi-studies are, I think, important for a number of reasons. First, like language, taboo, and pyrotechny, psi is a human universal. Moreover, its similarity to these three components of culture is not merely general but specific. For, like language, psi is a means of communication; like taboo, it is a focus of hidden danger; and, like pyrotechny, it has immense potential for the transformation not only of the human world but of the non-human world around us.

Second, if we recognize shamans as psi-masters, then we must begin to see them ethnographically as more than just priestly physicians. Instead, we will perceive them as constituting veritable early warning systems for their peoples, providing not merely psychological security for their anxious parishioners but advance information about plagues, storms, earthquakes, and other potential disasters. Shamanism, in short, has been a highly functional survival technique. And I suspect that it can become so again if we do not laugh it into oblivion.

Psi and Cognitive Linguistics

Among the subdisciplines of anthropology, one stands out as psi-positive at its growing edge. This subdiscipline is linguistics, whose newest school, Stratificationalism, differs most markedly from its recent predecessors in the holistic view it takes of the various aspects of language. Unlike Structuralism, it does not treat phonology as somehow realer or more objective than grammar; and, unlike Transformationalism, it does not place grammar in a comparably invidious position vis-à-vis semantics. Instead, it sees each stratum of language as equally indispensable to the totality of effective linguistic communication. Moreover, the school's creator, Sydney Lamb, has recently changed the name of his analytic method from Stratificational to Cognitive Linguistics, so as to emphasize its closeness to the study of thought in general. Furthermore, those paranthropologists who are not familiar with the development of Stratificational Theory should be particularly gratified to learn that Lamb's interest in language-and-thought extends not only to neurological and psychological aspects of behavior but explicitly also to parapsychological aspects.

Toward Paratheology

Such terms as "paranthropology" and "parapsychology" inevitably raise the question of how many "para-disciplines" there are or may be in the scholarly spectrum. As we survey the disciplines, what we find, ironically, is that the "para-" prefix is more acceptable in the natural sciences than in the humanistic studies. "Paraphysics" has long been known, but "paratheology," so far as I know, has never been suggested.

My guess as to the reason for this discrepancy is that the domain of the occult, remote as it may be from physical science, is not competitive with such science; whereas the occult and the religious, being uncomfortably close to one another in substance, do compete and therefore tend to be kept as far apart as possible in form.

Having no vested theological interests, however, I am untroubled by this competition and hence inclined to ask only whether there are any domains of investigation which might usefully be termed paratheological. And my response is affirmative. If theology is defined as the study of divine beings, then we may expect it to be confined, in its narrowest sense, to the study of God or gods and, in its broadest sense, extended to the study not only of deity but also of divine auxiliaries, such as angels, and divine antagonists, such as devils. But, either way, there remains a host of supernatural beings, known to the world's mythologies, which are scarcely divine even in an extended or inverted sense. This host consists of giants, gnomes, elves, fairies, spirits, ghosts, and similar beings. And it is to them that I would devote the hypothetical discipline of paratheology--if I could find even a few theologians willing and able to undertake this innovative task!

Nonetheless, despite these neologistic proclivities, my ultimate preference is not the creation of a plethora of new paradisciplines further to confuse our already fragmented search for knowledge. On the contrary, just as I think that the so-called supernatural is probably best regarded as an intellectually alienated (and hence scientifically rejected) aspect of the natural, so also I believe that the so-called paranormal is actually an unrecognized aspect of the normal. In each case, our dichotomized perception--and consequently our dualistic classification--of reality is probably due to a constricted vision of nature and an unduly narrow set of scholarly norms. Nature is more capacious than natural philosophy has yet realized and normality more multifarious than normal psychology has been ready to admit.

The Improbability of Impossibility

If, inspired by sceptical imagination while guided by imaginative scepticism, we can steer the difficult middle course between the Scylla of scientism and the Charybdis of occultism, there is no reason why we should not bring psi-studies to flower. One of the obstacles in our way, of course, is the pseudo-scientific concept of impossibility. I call it pseudo-scientific because, by empirical standards at least, there is no way to prove any occurrence impossible.

For, although possibility is proved by actuality, the converse does not hold. The non-appearance of an object or the non-occurrence of an event on any given occasion proves nothing about any other occasion. As Arthur Clarke delights in pointing out, virtually every technological advance that followed the Industrial Revolution was declared, in advance, to be impossible by some of the most distinguished scientists of the time.

Much of the difficulty here, as I see it, is a pattern of self-deception that has, if anything, been growing in the scientific world in recent decades. It has to do with the so-called scientific method. This method, most of us were taught, is a step-by-step procedure which begins with data-collection, proceeds to hypothesis-formation, and ends in verification, modification, or disconfirmation. The fallacy lies not in the description of this methodical procedure, which is tolerably accurate, but in asserting that it is the means by which all (or, at any rate, all acceptable) scientific discoveries are made. In practice, as most of us know from professional experience, "scientific method," if it characterizes our work at all, does so only after our discoveries have been made, when we are checking and rechecking our results. The hypnagogic vision in which von Kekule saw the structure of the benzene ring and the flash of insight in which Niels Bohr pictured the atom as a miniature stellar system are not eccentric deviations from regular scientific procedure; they are typical of how inventive minds think!

The more candid members of the scientific community have generally admitted as much, at least in private. But they have sought to soften the attendant blow to the scientific image by maintaining--without empirical evidence--that what is popularly called "intuition" is in reality unconscious reasoning, in which the logically necessary cogitative steps are not omitted but merely forgotten about.

As far as evidence is concerned, however, there is no more justification for asserting that intuition is unconscious reasoning than for arguing, contrariwise, that reason is fragmented and decelerated psi.

Mechanisms, Biotisms, and Psychisms

The polarity here is unfortunate, smacking as it does of the old dualities of body and soul or matter and mind.

Perhaps, in the spirit of Bertrand Russell's metaphysic of "neutral monism," we should seek neither to materialize the mind, as we do when we speak of "psychic mechanisms," nor, for that matter, to mentalize matter, as we would if we were to counter that locution by speaking, instead, of "mechanical psychisms." Just what the neutral substance is which may underlie the physical and the spiritual, I do not know. But I would not object if some imaginative botanist or zoologist were to suggest that it is a "biotism."

One of the reasons, no doubt, for the widespread view of psi as illusory is that most cryptesthesic powers are both weak and intermittent. But it does not seem realistic to confuse the weak with the non-existent or the intermittent with the non-occurrent. Those ethnographers who have come to know shamans well uniformly report that most shamans admit they periodically lose their psi powers for brief periods of time, during which they usually resort to sleight-of-hand or ventriloquism, but that eventually they regain these powers and put trickery aside. No shaman has yet been encountered, to my knowledge, who believes that shamanism itself is a fraud. Although shamans are usually described as having a questioning turn of mind, their doubts almost invariably seem to apply not to their profession but to themselves and their fitness to continue in it. Those shamans whose powers flag to a point where they are forced into increasing fraudulence are generally not, as we might suppose, either exposed by indignant clients or given to the permanent practice of lucrative chicanery. Instead they nearly always abandon shamanism, apparently because the cognitive dissonance set up between lofty profession and deceptive practice becomes psychologically unbearable to them in time, even if it remains either undetected by or tolerable to their less-gifted clientele.

As more is learned about the anatomy, physiology, and psychology of perception, it becomes progressively clearer that perception is not a purely passive process. Since the number of stimuli impinging on an organism at any given moment is virtually infinite, the perceptive process becomes of necessity an act of selection. But, as any Christmas shopper knows, selection itself can be a creative act. In effect, then, all perception is in some sense creation. And where, as in the case of psi, the stimulus is inconstant enough to make perception difficult, perception becomes *a fortiori* creative--whence, of course, the charge that it is hallucinatory or delusory.

The other side of this coin of activity and passivity is, obviously, invention, whether what is invented is a percept, a concept, or an artifact. The conventional view of invention, especially since professional inventors appeared on the scene, has been that it is the acme of creativity. Among those who despise gadgetry, the type of invention most admired is either art (esthetic invention) or science (intellectual invention). In all these cases, however, it is felt that initiation--as opposed to imitation or consumption--is the loftiest human activity and the one in which man most nearly approaches his divine maker.

Yet here, too, we may confront a lurking paradox. For if, as most students of psi believe, all of us are subjected to a continual stream of psychic messages only a few of which even the most perceptive of us can respond to, it follows that much of what we call creativity may actually be no more than a higher than normal percipiency. Indeed, it is quite possible that all invention (which, in Latin, meant "coming upon" or "finding" something) is simply a gift for picking up and passing on messages whose source remains unknown. If this is so, then it follows that there really is no fiction, either in the heads of schizophrenics or on the pages of literature. Reich's "cosmic streamings" and Shakespeare's "woodnotes wild" would, in this case, equally constitute realities which the average member of society can apprehend only as they are captured and transmitted by visionaries.

Psi-Studies and Anomalistics

Let me conclude with a few words about the place of psi-studies in scholarship. Needless to say, I do not believe that they belong under any one of the accepted academic rubrics, whether (para)psychology, (para)physics, or another (para-)discipline. But I can comfortably subsume them under the heterodox heading of what I call anomalistics, the serious and systematic study of anomalies of whatever sort. Anomalistics, the substantive (though not terminological) creation of journalist Charles Fort, embraces not only oddities, like falls of wingless animals from the sky, but paradigmatic problems, like the currently chaotic state of particle physics. Literally, of course, an anomaly is a lawless phenomenon; and it may well be that there are no strictly lawless phenomena but only phenomena whose laws we have not yet discovered. Whitehead, I think, had this thought in mind when he remarked that humanity is driven forward by its dim apprehension of notions too general for its present powers of formulation. So anomalistics may be optimistically redefined as the study of phenomena whose laws are still in process of being formulated. If this redefinition is accepted, then all current anomalies, including psi, must be viewed as special subcases within those faiths, arts, and sciences which are themselves cases to be included in some larger view. This larger view I would describe as an incipiently holistic vision of the cosmos.

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Editor's Conclusion

Wescott provides a cogent argument here as to why anthropologists and other scientists must experience an increased awareness of paranthropology. In keeping with the original interdisciplinary nature of the 1974 American Anthropological Association symposium which eventuated in this volume, he demonstrates that, although parapsychology is intimately linked to the study of man by virtue of its manifold linguistic relationships, it must become a part of all fields as their subject matter is found to include more and more anomalistic data.

THE POLITICS OF PSI: ACCULTURATION AND HYPNOSIS*

Charles Musès

Editor's Comments

Musès calls for an ecological revision of human communities based on our present knowledge of operant conditioning. He says that "the prime problem of twentieth-century cultural anthropology is to transform the depersonalizing patterns of acculturation cues currently prevalent in technology-dominated societies...." His premise is that modern societies, being the outgrowth of repetitive sequences of pathological conditioning and negative hypnotic (or post-hypnotic-suggestive) cues born of a series of terroristic political machinations, are bound by a chain of terror-ridden consensuses. In other words, technocratic culture is a functioning but pathological ecological adaption based on a system of hypnosis-inducing cues. This is reminiscent of Wescott's assertion, in the preceding chapter, that culture is mutual hypnosis.

Musès' concept of cultural hypnosis emphasizes the danger of cues based on erroneous syllogisms: the confusion between complementary opposites (odd-even) versus incompatible noncomplementary opposites (evil-good), the false dichotomy of mind versus body or paranormal versus scientific, and, ultimately, the premise that political might equals right (a covert assumption of Western culture). Considering our increasing awareness of the "limits to growth," the "doomsday" that may await us, the "decay of the cities," and the already present ecological disaster wrought by industrial pollution, this premise is not difficult for most of us to accept. But for all of this, Musès provides few tangible or concrete solutions to the problem of culture as mutual hypnosis or as acculturation-cued operant conditioning.

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What Musès' work does suggest, based as it is on cross-cultural observations about trance states, psi-conditioning, and consensual hypnosis, is that "noetics," or feedback between matter and consciousness (including the extrasensory components of mind phenomena), provides the potential tool for orienting culture to personal needs. Ecologically, he suggests that with greater technology social functions have become increasingly limited to strictly material goals, thereby effectively depressing or excluding the spiritual (or "consciousness," or humanistic, if you will) goals of the human organism. Many readers will object to Musès' use of new technical terms with which they are unfamiliar, but few will question the need for us to escape from the bonds of absurd cues to which modern media and politics have conditioned us or the need for us to return to a more individual-oriented society.

* * *

Introduction

There is a new and growing wave of interest in nonordinary states of consciousness in our Western culture. When one of the launchers of that wave, Aldous Huxley, was writing his book on mescaline we were talking about it one day, and I argued against his writing it, saying that his undeniable authority would convince many readers, unprepared for the consequences, to first try hallucinogens and then perhaps go on to physically habit-forming drugs. Huxley did not deny the cogency of the argument, but countered saying that he was "not naturally mystically gifted" and that without mescaline he would have had a much smaller and less exciting picture of reality. I still demurred on the basis of the foreseeable psychological casualties to others.

In retrospect I grant him his points. Undoubtedly, as with any wave of rapid social change, there were casualties. But I had now seen previously very narrow and naively materialistic scientists and officials change into much broader and even more balanced men after psychedelic experience had shown them the world was vaster than their prior procrustean philosophy had allowed. I still would not advocate the drug method. But I could not deny it had had some positive results in terms of deep changes of viewpoint. Much more reliable and in the long run more powerful, however, are methods of psycho-transformation that use means within consciousness itself.

It has become clear in the latter half of the twentieth century that the world is not well understood at all by natural scientists, despite the great technological advances they made possible. The greatest of our scientists, like Nobelist Eugene Wigner, grant this point. Moreover, we are only beginning to realize the price those very technological advances are going to cost us because of the gross ecological ignorance and deliberate abuse that characterize them. The basic error is that the overriding drives for wealth and power prompted by industry (capitalistic or communistic) characterize our increasingly questionable "progress."

The wave of interest in nonordinary states is very understandable: the times' desperation admonishes scrutiny of the previously neglected. What is less obvious is that all this interest has thus far resulted in more froth than substance.

Here is where a study of cultural anthropology can help strike the balance. In doing any serious ethnographic research in this field one finds that all the phenomena bruited about today were just as faithfully reported over the past two centuries. One of the best collections of material was published first in 1894 with a later enlarged edition (Stoll 1964): an over 700-page octavo volume entirely devoted to phenomena connected with suggestion and hypnosis in various cultures.

When I wrote my study of ancient Egyptian auto and hetero trance-induction techniques (Musès 1972/74) I was not aware of Stoll's work nor of the fact that in the mid-nineteenth century Egyptologist H. Brugsch had already made the first translations from the very Demotic manuscript I had researched (Stoll 1904: 332 n. 2., 333 n. 2., 334 n. 1). For a wealth of parapsychological/anthropological illustration and further reference, the reader is referred to Stoll (1904), Musès (1972/74), Sahagún (1938), and Elliotson (1843-55).

Acculturation[1], Operant Conditioning, and Hypnosis

I have pointed out the deep-seated psychological homomorphism between the acculturation experience and that of slow but strong hypnosis (Musès 1972/74). Much culture-specific behavior and reaction that otherwise seems idiosyncratically arbitrary, is readily understandable when explained on the basis of being a widespread but too often unidentified type of post hypnotic suggestion (PHS) cue--that is, a suggestion implanted during induction but tied to a triggering cue which will activate the suggestion later, during ordinary consciousness.

My proposal in this connection is that acculturation is slow operant conditioning, and operant conditioning is slow hypnosis:

Operant Conditioning ⟷ Slow Hypnosis

Specifically, the Pavlovian salivary response to the rung bell is in fact the response to a PHS cue, implanted in this instance by time-association instead of by word-explanation, the usual method with humans. Thus behaviorism's entire repertoire of methods and effects is based on important intrapsychic or noetic processes that result in observable behavior. The naive behaviorists are like people who, because they can see only the hands of a clock moving or the light-emitting diodes on an electronic watch lighting up, say that this is all there is to the clock or watch, omitting all the inner wealth of subtle processes essential in creating the observable behavior of the clock or watch face.

Similarly, there are some who place the primary explanation of hypnotic phenomena on role-playing to please the hypnotist. The advocates of this omissively reductionist theory must blind themselves to the deep differences in elicitable properties in unmistakable and genuine hypnotic states of consciousness as contrasted with the much more superficial and self-aware state of mind of an actor, even one autosuggested by the Stanislavsky method. Admittedly, suggestions that induce hypnosis often involve suggested roles, but these are a mere means in a process and not the point or end-product at all. The trance subject is undergoing far more than mere acting[2], and the consequences for someone who does not realize that fact could be unfortunate.

Even more misguided is the self-styled "cognitive behaviorist" who by the logical absurdity of omissive premises is forced to deny the abundant and neglected evidence for such phenomena as psychosomatically induced stigmata (Ullman 1969; 1970), genuine hypnotically induced blisters, permanent cures of hysterical blindness and deafness, repeated induced hallucinations of either presence or absence, and dental work, surgery, and birth without anaesthetics because of induced changes of consciousness. Such a cognitive behaviorist is in all likelihood a very poor hypnotist, able to elicit only light trance states. His omissive theory then becomes a comforting and face-saving device.

The evidence from all cultures and over centuries is overwhelmingly weighted in favor of the genuine existence of states of consciousness in which paranormal, cognitive, and bodily reactions and powers appear which ordinarily are not available to the subject in either degree and/or kind.

The essence of our entrance into hypnosis is a deep and unquestioning acceptance, as binding and unarguable, of what is told or presented to us. Konrad Lorenz's studies of imprinting imply strongly a similar period of optimum "imprinting" in the human infant and child. Psychoanalytic evidence of case histories over decades has also confirmed that impressions, helpful or harmful, received during early childhood and infancy are extremely persistent as determinants of behavior. Grof (1972), and others before him, push the time element back to even intrauterine experience. They are in fact PHS-cue implants.

Indeed, we now set it forth as a prime principle that:

1. All culturally received behavior-admonitions during infancy and early childhood act as powerful suggestions in the hypnotically plastic imprinting stage of life.

2. Behavior modifications due to the posthypnotic suggestive power of such admonitions can accompany the subject throughout a lifetime unless some other mode of suggestion via word and/or experience operates powerfully enough to dissolve the former cues and transform them into another set.

3. In any case, the nature of the judgment-delegating processes in human psychic life ensure that we are always behaving with respect to some set of cues, either consciously accepted by us or not and beneficial or not as the case may be.

Many anthropological/cultural phenomena entailing severely altered states of awareness are traceable to acculturation-hypnosis as their basis of support.

A fascinating, well-evidenced, yet little known example of the power of acculturation-hypnosis is found in the Temacpalitotique, or bewitching thieves, of ancient Mexico reported by de Sahagún (1938: 350-52). These, in bands of about fifteen to twenty men, would time their forays to agree with shared cultural beliefs in the ritual calendar or tonalamatl, choosing a "9" day such as 9-Malinalli, for example. Then, carrying a statue of the god of invisibility, Quetzalcoatl, they would approach the house to be victimized while they danced in a peculiar rhythm designed for auto-trance-induction, and one of them carried the left forearm from the corpse of a woman who had died during the birth of her first child--another culturally accepted cue.

They would then first beat in the courtyard of the house with this grisly mascot, in a certain rhythm known and associated with them throughout the culture, and finally they would give the door of the house a peculiar knock and shout a certain cry. At this, all the inhabitants of that house would fall either into a sudden sleep or else a temporary paralysis of both locomotion and speech even while being able to see and hear. Then, while all their victims were in this state, the hypnotist thieves would calmly steal all the food and precious things without any trouble or disturbance. They even on occasion raped the entranced women of the house in quasi-necrophilia.

When caught *in flagrante delicto*, they would be shaved to the skull to deprive them of their magical powers. They also believed in this so the shaving actually did work as an acculturation PHS-cue and they would lose the power to induce such states. That effect would be doubly ensured by the fact that a shaved head was fully accepted also by potential victims as a sign of powerlessness, and hence would act as an hypnosis-inhibiting cue. (Sometimes they would then be stoned by would-be victims turned captors.)

Another illustration of the importance of both auto- and hetero-hypnosis (actually, all induction into altered states is auto) comes from the Kazak-Khirgiz and the eastern Turcoman peoples of Central Asia (Castague 1930). The observer was the Russian administrator D. Tchtchetinkin who witnessed a curing seance, on the evening of September 7, 1895, of the Kazak shaman Tanabai Kostildin. When the Russian asked the shaman how his cries and apparently meaningless antics could effect a cure, he replied simply and with a perfect conviction that very shortly the sick man would be restored to health, just as had been, two years before, the mother of another administrator in the Amankul region when he had treated her.

Another case history from the same source shows the shaman inducing a psychosomatic cure of snake-venom poisoning. A curious contemporary counterexample was reported (*San Diego Union*, November 18, 1975) from the Los Angeles County/University of Southern California Medical Center. An 11-year-old boy was taken after a nonpoisonous garter snake had bitten him. The boy believed the snake to be poisonous, and his physicians, though they verified the reptile was nonvenomous, were amazed at the psychosomatically induced simulation: the boy's arm was enormously swollen up to the elbow.

Countless less sharply focussed instances of cultural conditioning or acculturational implanting and imprinting of PHS-cues occur in every culture. The principle is very clear, and can also act as a basis for parapsychological phenomena, which almost invariably are accompanied by detectably nonordinary states of awareness.

Hypnosis and the Paranormal

Actually, acculturation is but one aspect of the entire gamut of the consciousness spectrum:

ordinary sensory awareness $\rightleftharpoons$ nonordinary mediating states $\rightleftharpoons$ fully paranormal states

The situation is similar to red compared to blue. Though easily distinguished, they are in a continuous spectrum of hues running through red to russet, orange, yellow, chartreuse, green, aqua and blue; there is *no one place* where we are able to say, "Here red turns into blue." There is a very similar situation in our awareness of numbers. Thus 1/2 and 1 are unmistakably distinct, yet they are mediated by an infinitude of numbers slightly more than 1/2 (for instance 501/1000) through numbers like 5/9, 4/7, 3/5 until we finally reach 4/5, 6/7, 8/9 and 999/1000. We finally realize *there is no single number* that can be called the next number after 1/2 or the number just before 1.

So it is with alterations of consciousness. Starting with normal consciousness, the spectrum shifts first to some (self- or hetero-directed) acceptance of an imagining, or role, and finally to some full bodily and psychic manifestation of a definitely nonordinary state of mind. Yet nowhere can we name a point where we can say, "Here ordinary consciousness becomes nonordinary."

The failure to comprehend this characteristic of all spectrum phenomena, whether in color or number of consciousness, can easily invalidate conclusions built on the false premise of either a distinct transition point, or, worse, a denial of any number beyond 1/2 or any state other than ordinary waking consciousness.

It is becoming clear now that there is a general state-spectrum, valid for all cultures because it's based on the human psychic constitution. The principal "hues" of that state-of-consciousness spectrum would be delineated more or less as follows:

1. *Sensory awareness*;
2. *Acceptance* of *premises* via some means of rendered plausibility;

3. Persuasion: directed acceptance of inferences based on (1) and/or (2);
4. Fixed conviction: no longer questioning concluded acceptances;
5. Behavioral and psychosomatic results: heightened, paranormal (neutral or beneficial) abilities and pathological (destructive) results.

Various examples of these "hues" are genius; telepathic, clairvoyant or x-ray-like vision; precognition; and schizoid or paranoid delusional behavior. The common factor in all of these is a genuine inability to perceive objects, situations, or other persons in terms of the ordinary waking consciousness of the culture, or even to appreciate that other members of that culture have these perceptions.

Now we can arrive at a really workable definition of sanity. Note that the essence of sanity is not necessarily merely being party to a consensus. Sanity lies in appreciating, in terms of one's own actions towards them, the viewpoints of anothers' consensus and its value to them, regardless of one's own opinions, beliefs or even convictions. Insanity is the stoppage, through fear (or some other failure of love), of that salutary feedback.

The delusional dangers of awakening nonordinary states undoubtedly constitute the basis of repeated warnings in the classic yoga texts of the Hindu tradition, for example, and also explain the average persons' shying away from unfamiliar states of consciousness because of the natural apprehension that such states might prove dangerous for them without specific knowledge of how to handle them. There is indeed grave danger when appreciation of others' viewpoints is lost.

Acculturation, Hypnosis, and Government

The continuity between ordinary and nonordinary states having been grasped, we are now in a position to see that the nature (and hence the theory) of persuasion--habit and attitude formation and transformation, salesmanship, social success, ideological (religious or political) conversion, "brainwashing," induced confessions, mystical states, hypnosis (hetero- or auto-), suggestion, acculturation, propaganda and advertising--involves different aspects of one and the same process. That process, the shift from the questioning to the unquestioning state, has been the power source of almost all human cultures and governments.

The principal method of inducing such changes is to generate expectations of pleasure or pain (i.e., anxiety, fear, or terror) or even some oscillating mixture of the two.

Let us return to the hypnotic thieves. Note that, though the occupants of the robbed house could even see and hear, they were powerless to move and some fell into a deep sleep-like state. Clearly, powerful and culturally enabled means of hypnosis were at work here.

It is equally apparent that terroristic means of inducing the hypnosis were being used: weird chanting, the image of a powerful supernatural held aloft, and the horrifying forearm of a corpse used to beat out a terrible drum-like tatoo closer and closer and finally on one's own house door, and a climactic cry. Stage hypnotists too use suppressed fright and terror to induce passive states that lend themselves to passage into nonordinary states.

One rather sadistic animal experimentor, Richter, found that if wild rats were terrorized after their whiskers were cut off (thus depriving them of a very important means of sensory reassurance), their hearts not merely slowed but stopped (Oswald 1966). Oswald (pp. 108-9) further noted that "well-authenticated deaths following quickly upon intense grief or terror can be found among sophisticated societies as well as among many primitive peoples."

The terror-induced trance belongs definitely in the pathological realm of hypnosis. We mention it only because, regrettably, it has occurred so frequently in human culture. The days of the Inquisition are well over, but we still have the practice of torture-induced confession politically used. Some religious figures and organizations even today control their adherents by threats, terror, and that less climactic but more steady form of terror known as "induced guilt." There is scarcely a contemporary government that does not employ some sort of cues for threat or outright terror, in order to produce psychological states of controllable behavior such as the docile paying of confiscatory and even openly corruptedly used taxes. And political revolutions solve nothing. Indeed, a key principle of political revolutionaries is: "Break out of all your conditionings except those which we will impose upon you." This is the induction procedure of a new hypnotist taking over. However, people are beginning to see that the only revolution that can genuinely liberate them is noetic, one of and in consciousness. Something of that sort is happening today. The only danger is that it will drive politicians of all ideological colors, in classical paranoid reaction, to adopt police states to defend their "freedom to control," once enough people begin to wake up.

On the other side of the coin is the induction of nonordinary states by profferings or promises of pleasure or in general something desirable or beneficial to the subject. There are pathologies here too of reversed cues: namely, sadism, where something ordinarily very painful, namely the pain of another, is pathologically reversed into a pleasure cue; and masochism, where pain inflicted upon oneself is reversed into a pleasure cue and is therefore actively sought.

Many nonordinary states characterizing various religions are in cultures otherwise widely different linked with sadomasochistic cues. All blood sacrifice or imposed suffering, real or symbolic, contains such cues. For instance, the Judaeo-Christian institutions and rites are full of them.

Clearly, the study of pathological nonordinary states is valuable in enabling one to avoid delusional conditions. In this sense, a deep appreciation of cultural anthropology is of powerful psychotherapeutic value for anyone.

The pathological aspect of the entire picture that we have been considering is a necessary prelude to the balanced understanding and assessment of genuine paranormal phenomena in any culture. There is no inherent need for the pathology. We are saying now quite emphatically that insanity is not necessary for genius (Musès 1968: 114-15), nor is suffering inherently necessary for enlightenment, nor is sickness necessary for health.

There are two distinct kinds of opposites, too seldom if at all distinguished. One kind is quite normal: such sets of complementarities as light and darkness, convex and concave, red and green, male and female, odd and even, and so on. But there are other kinds of opposites that are not only noncomplementary but actively incompatible: namely, disease and health, idiocy and intelligence, evil and good, despair and hope. It is the gravest confusion and error of judgment to confound the two kinds of opposites. Confusion about them has spawned a host of erroneous philosophies. In the first kind, we not only do not need the destructive one, but the less we have of it the better. That is why the illusions of something "beyond" goodness (that is not malice or cruel indifference) or of something beyond "freedom" (that is not slavery) are so unrewarding.

Applications of De-Acculturation[3] and Noetic Transformation

Lévi-Strauss' (1963: chapter 10) "effectiveness of symbols," James Frazer's observation that "imagination" may kill a man as surely as a dose of cyanide, and Joseph Campbell's rather surprising surprise at the extraordinary influence of myth-figures on human behavior--all of these are about the same thing: induction cues leading to nonordinary states of awareness.

What has tended to mask the common noetic process behind all these phenomena is the necessary cultural variation of background, setting and specific means used to initiate or precipitate the unusual state. We say necessary because the PHS-cues used depend largely on a long history of prior slow and repeated inductions via the acculturation process.

One would therefore expect diminution in the ease of induction if the cultural setting were changed. This is so and many examples like the following could be given. Nina Epton records that "a Western-educated Balinese told me, with a shade of regret, that until he left for Europe he was able to 'leap into the other world' (of trance) in the space of twenty seconds. 'Now,' he said, 'it takes me at least half an hour and even then I am not always sure of succeeding'" (Wavell, Butt, and Epton 1967: 112).

Similarly, the means of inducing nonordinary states in any Western, technology-dominated culture become fewer and fewer because of the arbitrary imprinting in this culture that such states are nonexistent. The creed, not specified but still instilled by almost every Euro-American college and university and through countless repeated advertisements and television commercials, consists of these suggestions:

1 You are only your body; your personality is only your brain. When they disappear, as they will and must, you will be as annihilated as a burst bubble. Consciousness

(never mind how) is merely a property of inanimate molecules in certain combinations. Don't ask why, simply accept what we say, and more as follows. You have only one life--forever, but Extra-Cola will help you live it better.

2 In the beginning there was a Big Bang and one day, suddenly, DNA (deoxyribonucleic acid) arose and then life turned into fish and they (somehow) into lizards, and the rest became mammals; and from these (somehow) came humans with syntactical speech and language.

3 All this happened by chance and there is no plan in any of it. You are merely a bubble that must disappear in an ultimately senseless universe. In fact you as an individual are quite meaningless and unimportant, though "humanity" is more important. We cannot tell you why except that the more you help your leaders do what they want to do, the better off you will be. There is no meaning in your or your race's transitory existence except fleeting, unstable happiness.

This is the twentieth-century creed of unjustified meaninglessness and despair that is being foisted on the peoples of the earth. The above creed, thus explicitly stated, is an important document for contemporary cultural anthropology.

Actually, the most advanced thinkers in physics were convinced by their findings even by the 1920's that materialism was hopelessly outmoded. Social events of 1930-1970 only confirmed this. But technological society's leaders, fascinated by their machines and in turn hypnotizing the masses by mass media, weren't listening.

As flotsam from the twentieth-century decay of the once-powerful Judaeo-Christian tradition, assorted inherited guilts were also overlaid upon the dogmas of despair and individual meaninglessness outlined above.

Let no one then be surprised by the success of any mass movement today offering psychological panaceas. People in pain grab at straws. As a good medical hypnotist in Dublin once assured me, victims of traffic accidents, because of their shock and pain, are easier to induce into the analgesic state than ordinary people, given that they believe the physician can do it. Their need plus their belief turns the trick.

And so it is today when throughout the entire world more people are suffering psychologically today than ever before. That is not surprising, given the rapid decay of almost all traditional belief and sources of hope, plus the imposition of the creeds of meaninglessness and individual hope-deprival that have been disseminated throughout technological humanity like a smog.

It is not surprising in this welter of despair that cleverly organized movements, all characterized by varying degrees of tongue-in-cheek cynical commercialism, should succeed. Wherever there is a widespread psychological need, there is a crass opportunity for quick and substantial profit and status for any who can convince enough people he or she is filling that need for them. The reason they work is the same as why accident victims are easily hypnotized. Unfortunately, in our despair-ridden technologized culture, there are more acculturation victims seeking anodynes than there are balanced, useful people seeking more advanced evolution.

Of course we acquire the language and whatever culture we inherit by the circumstances of incarnation or birth. But we then must break through it to firmer higher ground, without maligning our now discarded cultural sheath, and above all without the mistake of aborting ourselves before we are ready to outgrow it. For the way of self-abortion is to cripple ourselves psychologically, though it has been too stridently taught by some.

But we cannot renounce culture and language just because we have been abused by them. We must use them for individual growth-advantage, and not despise them as we outgrow them any more than a cicada would his moulted sheath.

The whole world is "hatching" now, filled to the brim with human/industrial wastes as a chicken egg with the embryo-life's own pollutants. Finally, when the point is nearly reached where embryo would die of self-intoxication, something happens ... and a whole new world is born, the old egg-world left forever. In addition, each of us is developing within our own unique shell of individually processed acculturation/experience cues. Let us become aware of this, become increasingly deconditioned and free, and yet not abort ourselves into disfigurement. Above all, let us know and seek the community of life evolved beyond where we now are. By an overwhelming probability, that community exists now. Let us live, then, so as to be worthy of it when we meet it, ineluctably.

The positive point here is as old as Plato: we must not accrete but recall. We must get rid of (decondition ourselves from) the veils that hide us from the ancient authenticity of our fundamental nature and creative uniqueness.

Complementary Individuation

To do this well we need a source of rebelief in ourselves as individuals who will transcend, also as individuals, our bodies and their dissolution. Furthermore, the most advanced thinking in physics, mathematics and psychophysiology fully substantiate that such rebelief is the natural antidote to the empty dogmas of meaninglessness which, without a shred of logical justification, have continued too long to commandeer the critical imprinting phases of acculturation in all Western-type societies. Thus the prime problem of twentieth-century cultural anthropology is to transform the depersonalizing patterns of acculturation cues currently prevalent in technology-dominated societies into patterns of unique but complementary individual fulfillment. This complementary individuation is the only lasting means of societal fulfillment.

The New Science of Noetics and Consciousness/ Matter Interactions

As the basis of understanding nonordinary states, with their rich harvest of awakened parapsychological capacities, a new science is emerging: noetics (Musès 1968; White 1968). Noetics is concerned with the nature, alterations and potentials of consciousness, and especially human consciousness.

Modern physicists have gone far beyond the nineteenth century's views of naive mechanistic materialism. Unfortunately, the physics still used in much of modern biology and in most present psychology and sociology is of the Newtonian variety, long given up as inadequate by modern physics. Let us concentrate, then, on the findings of modern physics which bear on parapsychology.

One of the most spectacular of these findings, and one surprisingly little known outside the ranks of specialists and almost as little appreciated within those ranks, is an amazing fact, confirmed by theory and from laboratory results: so-called empty space devoid of even matter or radiation, possesses inherent energy, "zero-point energy of the vacuum." This means, first, that nonphysical entities may under certain circumstances become physically effective. Secondly, it means that there are other and subtler kinds of substance than those upon which we base our conception of nuclear matter (or antimatter).

These conclusions open up the connecting corridor between physics and psychology, a connection that physics Nobelist Eugene Wigner predicted would reform our entire world view. It is being reformed daily as new and increasingly hard evidence accumulates. And a new picture of nature cum psyche is forming. Noetics thus includes feedback between matter and consciousness, a state of affairs long predictable from the sheer and insistent weight of undeniable psychosomatic effects of the sort in which concepts charged with feeling uncontestably affect physiology and thence change bodily conditions for good or ill as the case may be. Modern physics has even furnished the transducer for such consciousness-matter or C/M interactions; namely, the so-called vacuum (Demys 1972; Musès 1973, 1975a). It also gives us otherwise unutilized free energy in the form of the Heisenberg-London-Heitler bioenergies, which are thus available to be harnessed within the body, after the first tiny triggerings by the zero-point vacuum energy. We thus have a cascading series of microenergy developments, probably a nonlinear bifurcating cascade, to use a technical mathematical term from the modern theory of differential equations (Kolata 1975).

It is the conscious mind that is really "unconscious," the more unaware of all of that is going on within us. In the same sense, the so-called unconscious is the most highly aware of all. So our language betrays an ordinary-awareness centrism that is often delusory.

In summary, evidence from physics is in harmony with parapsychology. (The reader is referred to more technical writings: Demys 1972; Kolata 1975; Musès 1974.) Suffice it to say, the foundations for a deeper understanding of anthropology through parapsychology have now been begun.

* * *

Editor's Conclusion

This volume is mostly concerned with material evidence of psi as it relates to anthropology, psychology, and medicine, with an emphasis on primitive societies. It may thereby tend to exclude those very elements of human ecology in which extrasensory elements are likely to have the greatest adaptational effects on our own society. Musès' chapter fills this void with some suggestions linking modern society with preliterate ones. He suggests that psi elements come into play in terms of the hypnotic suggestion (terroristic trance cues, etc.) that has increasingly become part of our adaptation to the modern technological environment. The suggestion is that the "goats," such as scientists who are psi-resistant, are in fact better tuned into the nonsense cues of the modern world than are the "sheep" whose personalities are so open to psi. The point can be argued in several ways. For example, in my opinion, the most famous of the recent "prognosticative psychics," both living and recently deceased, represent among the most frightening of recent political phenomena. As junk media gather increasing followers, these "psychics," by the forecasting of political events and the personal downfall of political figures, create self-fulfilling prophecies which have nothing to do with paranormal phenomena. Some parapsychologists have studied these "psychics" (and have even had their research supported by the psychics) and have found exceptional abilities among some "psychics." If these are any sampling of our potential mind-matter interface, then the thought of adaptation to the modern world based on the expansion of consciousness is not reassuring.

But Musès is not suggesting that pop psychics, astrologers, palmists, and all the rest be given particularly salutary positions in world politics. Rather, he submits that the totality of human consciousness of all people should be recognized as being just as important to cultural adaptation as the technological-material aspects of modern society are. Greist and Lyon suggest in their chapters above that psi enhancement through speech and eye contact may be a universal of human communication. Thus must we view the noetic blend of matter and consciousness as a natural capacity of all humans which should be promoted among all people, and at all political levels.

Notes

1. That trance states are qualitatively different from ordinary waking consciousness is a basic observation of all who have genuinely produced and contacted such states in persons, mammals or birds. Even the male spiders of certain species appear to be able to induce a stuporous trance state in the ordinary voracious female by using a tactile induction technique with his legs and palps. I have observed a clear-cut sleep state in moths. When touched even boldly in this state they don't fly away as they ordinarily would, but their wings and antennae vibrate in a high-frequency, short-wavelength tremolo. And they need repeated disturbance before they fully wake up and finally fly off. I have also observed a cicada (that had completely lost reactive and motile consciousness after drowning) revived by artificial respiration applied to its abdomen (where the spiracles or breathing tubes are situated) and fly off after about ten minutes.

This passage from Oswald's (1966: 108-109) study of nonordinary states (principally sleep but including others) is relevant:

> Some Czech experiments, involving rabbits, carried out by a Dr. Svorad, may serve as examples. The animal was held immobile and then rapidly spun round about its long axis ten times, ending up on its back.... The rabbits, after being whirled round ... remained motionless on their backs and after some seconds their EEGs became transformed into the pattern of sleep. A sudden flash of light, a loud noise, a

> further forcible turning round of the body, or a brief electric shock, left the animal still apparently sleeping with only a momentary reaction in the EEG. Eventually, of course, awakening occurred, leaving a normal animal. Investigating a variety of animals, of varying ages, Svorad found it was the young ones in whom the state of inertia and unresponsiveness could most easily be induced.

Thus qualitatively different and inducible states of consciousness are not confined to human beings but range far phylogenetically.

It is also clear from the cryptobiosis of some lowly creatures like the microscopic tardigrade or water bear--this tiny eight-legged water mite can survive in a death-like dessicated state for well over a hundred years without oxygen, warmth, food or water--that its almost seed-like state requires a very different kind of consciousness than its normal waking condition. The much less dramatic but related hibernation states of some animals also imply nonordinary states of consciousness, achieved by self-induction.

In humans, however, due to the more precise and powerful symbolic/linguistic means of reaching into the entity's consciousness, the induced trance states can have dramatic properties, including the ability to execute in the post-trance states suggestions given with implanted delay-times during the trance state, with pre-described execution cues, such as hearing a certain song or word, seeing a certain color or object, or even experiencing a certain situation.

As an example of the unarguable changes produced in genuine trance states, there are many cases like Ullman's (1969, 1970) hypnotically produced blister and the earlier one of a suggested severe burn during a hypnotic session, using only a laying-on of scissors at room temperature. Not only was a severe burn produced, but it took two months to heal. Clearly something more than mere acting or delusion is being involved. Also see Rudolf von Krafft-Ebbing's Hypnotismus (1888).

Some of the early practitioners were excellent and their writings abound with instructive cases. For instance, the journal Sphinx (March 1887) contains a very full and useful bibliography of the important work on hypnosis in France. And in the Revue de l'Hypnotisme (Paris) are found such advanced themes as hypnotism and suggestion in their application to the treatment of nervous and mental illness (Voisin, July and August 1886); telephonic hypnosis with about a mile between operator and subject (Liegeois, July 1886); the treatment by hypnosis of urinary incontinence in adults and children (Liebeault, September 1886); successful posthypnotic suggestion conveyed by written letter (Burot, February 1887); and therapeutic hypnosis (Charcot, April 1887). In these matters our century has not advanced, printed braggadocio to the contary.

2. Awareness (not restricted to awareness in the waking state) is the basis of any state of consciousness (again not restricted to ordinary waking state). Mind as "that which orders awareness," is a psychological structuring of raw awareness/energy, so to speak. That definition/distinction has proved its validity over forty years of continuing research and new observation.

Spontaneous awareness or cognitive energy is more fundamental than that consciously focussed and impelled energy called attention, and its inverse, the attraction of attention by what might be called cueing energy. This latter is the kind of psychopotential energy residing in posthypnotically suggested cues.

Research on hypernumbers (Musès 1975) and their noetic applications, the raw awareness energy, the attention-impelling energy, and the attention-attracting energy all corresponds to a different kind of hypernumber algebra relevant to this problem.

3. De-Acculturation is also possible by counter-cultural cueing. Thus psychosomatic cures continued to be abundant at the most famous temple of the goddess Isis at Menuthis, Egypt, even into Christian times, until the Bishop Cyril transferred the bones of two martyrs (John and Cyrus) of the newer religion to that temple. Thereupon her cures ceased, and the (albeit lesser) number that still occurred were then attributed unreservedly to the charisma of Cyrus and John, in a clear transfer first of cultural cue (the bones) and then of belief, acceptance, and consequent suggestibility.

A striking form of temporary de-acculturation to release psychological energy is found in some of the counter-incest taboos in some cultures. We are all familiar since Freud with incest taboos in our society and in others. But things are not that simple. What Freud did not know and hence could not allow for is the widely held belief and practice of incest allowance for the gaining of psychosocial power. Among the ancient Irish and Egyptians, of course, it is now well known that brother-sister or even parent-offspring marriages took place in the interests of preserving royal lineage.

But the incest-permissions for the sake not of lineage but of extra psychological power are more interesting, the principle being that if one has enough courage and power to break a widely held societal inhibition, the power so exercised in thus breaking it would transfer to and bring success in other dangerous ventures. Thus Knud Rasmussen in Netsilik Eskimos (1931) says that although in general incest was strictly banned among these people, a great shaman among them first gained his powers after sexual relations with his mother. In Nyasaland during the days of first contact with Europeans in the early twentieth century it was held that a warrior would not be hit by the white men's bullets if he first had had sexual intercourse with mother or sister.

H. A. Junod (1912) in Life of a South African Tribe found that a Bathonga hunter of hippopotamus routinely has sexual relations with a daughter to ensure a successful hunt. C. M. Doke (1931) notes the same custom and reasoning among the Balamba who, while ordinarily strongly tabooing incest, enjoin it for an elephant hunter to have good fortune when about to set out on his quest for precious ivory. Finally, A. I. Richards (1935) tells us that among the Babemba, a witch doctor normally begins his shaman's life by some taboo-breaking act. A commonly chosen one is sexual intercourse with a daughter--thus furnishing suggestive confirmation for the Netsilik Eskimo shaman practice. So, under certain circumstances connected with power releases in the culture, normally very strong taboos are deliberately relaxed or lifted in order to enhance psychological power in special individuals by such exceptional release from the normal acculturation pattern.

It might perhaps be argued that such a relaxation of taboos would then be part of the original acculturation in a given culture. But that is not so, because the special allowances for breaking of the incest taboos in the culture, insofar as this can occur with special sanction, are never learned until adulthood, well after the acculturation has been absorbed. In fact, no psychological energy could be released by exceptional and infrequent taboo-breaking unless the taboo had first itself been thoroughly accepted. Hence the phenomenon of exceptional incest practice is better regarded as temporary and conscious de-acculturation for a special permitted purpose.

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EXTRASENSORY ECOLOGY: A SUMMARY OF EVIDENCE

Joseph K. Long

Preliminary Comments

To this point we have covered a great variety of new data, experimental approaches, and tentative theories about the operation of the paranormal in culture. It therefore seems almost redundant to say more. A summary of these materials can only amount to a list and description of each contribution, for the materials do not readily lend themselves to the devising of any grand scheme for the operation of the universe. They are integrated through the holistic orientation toward the study of culture and through the emphasis on adaptive mechanisms of culture as both are provided by the discipline of anthropology. They unfortunately do not begin to deplete the total possibilities for theoretical developments which will eventually bind the fields of anthropology and parapsychology.

In lieu of presenting a summary of the contributions here, an analysis of these is offered in combination with a number of field observations of psi in other cultures which are reported in anthropological reports. This analysis is made by direct reference to adaptive functions, thus reflecting the importance of the paranormal for cultural ecology, the most materialistic of anthropological methods, and reflecting this volume's integrating theme of an Extrasensory Ecology.

* * *

Introduction

Parapsychology has good anthropological source materials through de Vesme and Van de Castle. In the analysis of their work and other sources, observations of psi events are discussed in terms of the concepts of adaptation as emphasized in the growing anthropological specialty of cultural ecology. Almost twenty different theoretical schools exist in anthropology. A similar number of focal points for research such as child development and religion also exist. Certain of these foci are related to specific schools: religion is related to functionalism but much less to ecology. The ecology of Harris (1966) and Rappaport (1966) relates to religion well, however, showing that religion is adaptive and dynamic and not stagnant as classical functionalism would suggest. However, functional concepts are central to cultural ecology and are thus emphasized here.

Laura Thompson (1961: 95) has noted that neo-evolutionists and functional biologists began their interests in psi in the 1940s, but that social scientists have hesitated because "such recognition would necessitate a major revamping of basic theoretical assumptions." Although the evidence supports her analysis in some ways, theory will not be badly damaged by such recognition by anthropologists. The anthropology of religion would suffer, but so has it always, and in fact is already in some state of shock because of the new work on altered states of consciousness in psychology. Thus, it is not the theory which must so radically change but, rather, the anthropologists' cognitive views of nature's operations. Even if we were so theological as to accept all primitives' accounts of the supernatural as being true examples of the paranormal, it would have no major impact on cultural ecology, since cultural ecology tends on many points to either neglect or contradict theories about religion. It is suggested here that paranormal phenomena have adaptive functions which are not always just psychological or social-integrative, but often relate to the most basic events of survival: procuring food and fighting the elements. Pearce (1971) gives the example, possibly apocryphal, of the fertility ceremony which sacrificed a victim by ordeal in village India. One year, the victim entered the paranormal autistic mode and emerged unscathed because, apparently, of psychokinetic forces; after that, all victims repeated the psi performance, and so the myth. But the intimate relation between religion and psi--is this simply how we view reality?--does not preclude development of models of the paranormal which emphasize non-religious functions.

De Vesme's (1931) taxonomy may be as good as any but is burdened by a dependence on concepts and terminology derived from Judeo-Christian thought and spiritualism. In some cases (see Van Dusen 1974), it appears as if such expressions as "good fairie spirit" might be justified cross-culturally, but most such work is in highly experimental stages. Such terms as "Voodoo Death" may eventually prove to be even less justified. In sum, there is no simple way to align etic events with emic conceptualizations [see pages 12-27].

The anthropological term "divination" probably indicates the operation of telepathy in most cases representing true psi. But in occasional cases, telepathy must be ruled out in favor of precognition, clairvoyance, or PK (as in the death wish described above by Eisenbud, for example). Similarly, medical relationships may signify PK, but usually could also operate by telepathy and then, later, through normal channels of the physiology of psychological stress; if one telepathically senses violent hatred at a great distance one's ensuing death may result from adrenal failure via normal neurological and endocrinological response. The headings below group phenomena which have consistently appearing similarities, but the similarities may be either psychical or cultural, or they may reflect some preconceived anthropological notions.

Medical Adaptation

Vast research in the past twenty years of anthropology has shown that health and disease involve exceedingly complex interactions of psychological, cultural, social, physical, and environmental variables. Diagnosis and treatment constitute the most obvious interface between medicine and psi. Whether the practitioner is called shaman or sorcerer, witch or witch doctor, he is likely to possess many abilities beyond that of the average person. One such ability is divination which may be, in many cases, part of a diagnosis. Since many ailments involve internal disorders the anthropologist cannot verify, the psi element may not be amenable to testing. In any case, hundreds of studies have indicated that primitive diagnosticians have great acuity, and most sources have emphasized that the most adept native practitioners are good at curing disease, not causing it (Kiev 1972). In cases where practices are malevolent, either psi seems to be absent (see, e.g., Evans-Pritchard 1973) or the practitioners themselves are merely a highly developed figment of the imagination within the culture (see Kluckhohn 1944).

As with most sensitives, these practitioners cheat if they are unable to use their powers on command. Hence, the term _conjuring_ has come to be used in anthropology, especially with relation to drawing out objects said to be causing illness, although it is not certain that all conjuring involves trickery: psi may be involved in the Iatmul of New Guinea (Bateson 1937: 54-73), and in the Chippewa (Barnouw 1946: 7) and Salteaux (Hallowell 1942: 27-28) Indians of northeastern America.

Kirlian photography (Amos et al. 1972; Dean and De Loach 1972; Krippner and Rubin 1973; Moss 1974; and the new journal, _Psychoenergetic Systems_) shows some promise as a diagnostic aid, and there is much to suggest in the preliminary research that primitive curing involves this sort of phenomenon (which may be normal, not PK). Various anthropological films, such as _Pomo Shaman_, suggest that the curing process might act through the Kirlian process. Others show curing which does not involve touching, so if it is efficacious, then PK may account for it. Servadio's (1964) cases, presenting a strange mixture of psi and abnormal psychology by which the patients appear to produce illnesses in themselves as the result of cultural emphasis on anxiety, involve PK. This strengthens the argument that PK must sometimes be the mechanism for curing. Whatever psychical events produce change, they seem to be utilized by practitioners for curing. Although most anthropologists now question the concept that Siberian or other shamans are social deviants, the shamans who consciously use psi destructively are usually considered abnormal within their own cultures. This is certainly the case with Jamaican _obeah_ practitioners, although popular concepts and even some anthropological reports confuse them with Balmists. This consistent error is discussed at length (Long 1973a: chapter V).

For the clearest perspectives about how psi functions in healing one must turn to the most exceptional cases, those of "psychic surgery." Fuller's (1974; cf. Eisenbud 1975) report about Arigo, a literate Brazilian, is convincing. It is not fully comparable to most cases of primitive surgery, for Arigo's culture (at least at the legal level) did not fully support his practice despite the thousands of alleged radical cures, and Arigo took on a German accent and, it would appear, the personality of one deceased Dr. Fritz, about whom no records have been found. The history of Arigo contains enough repeated cases that deep and random cutting, extraction of parts, and immediate healing of the wound leaving virtually no scar can be viewed as well founded in this one case. There is no clear evidence that cases as seen in the Philippines are genuine, although observation is clouded here by the apparent spreading of this practice throughout the island, accompanied by rather sloppy attempts at prestidigitation. There are not many cases reported for truly primitive societies, and most which are found contain less than one would hope for (e.g., it is apparent in Margaret Mead's film, Trance and Dance in Bali, that the knives, though held with great force against the skin, never penetrate: the force is controlled giving the same effect as a razor gives in shaving). Brockhaus' (1968: 43-45) seems clearer. He reports that at the Dipri feast of the Abidji of Ivory Coast, with a trance state among 70 persons, the knife actually pierces the peritoneum, and occasionally the bowels spill out. In a few moments, the wounds close and heal (bowels are pushed back in with the hands). To make the case more convincing, some people cannot do it. When that happens, certain elderly nonparticipants enter the scene and make the wounds close and heal rapidly by what they call a "force." It was also claimed that gun wounds are healed in this way, although it was not witnessed by Brockhaus. Ohnuki-Tierney (1973) cites cases of GESP among Japanese Ainu and one apparent PK case of a shaman plunging a knife into his chest and having the wound close and heal immediately. He indicates that the GESP among the Ainu is genuine but that the PK event obviously is not because it is impossible! Howitt (1948) shows that the strength of beliefs alone, in Kurnai groups of southeastern Australia, are sufficient to indicate that psychic surgery in the Arigo mold occurs with moderate frequency. Mana, or impersonal positive power, may be obtained by cutting out the fat of a person and treating it ritually. This was not considered unusual by the Kurnais, but the fact that on one occasion the wound did not close and heal immediately was remembered as being astonishing.

"Voodoo death" is the negative aspect of psychic surgery, although it involves only psychological cutting. Accounts of it are frequent in anthropology and almost always "divined" by the anthropologist (Long 1972) as being due to adrenal shock as noted above (see Part V, Long's Shamanism ... pages 257-70).

A paranormal aspect of medicine and psychiatry which seems to have no obvious adaptive benefits is the poltergeist. This phenomenon is probably a PK phenomenon associated with psychosocial disturbances of an individual, usually during pubescence or somewhat later in adolescence. That pattern does not always hold (Roll 1972), but if one were to accept all reported but unexamined cases in the United States and the West Indies, one would probably find the early adolescent pattern relating mainly to boys in the United States and girls in the Caribbean. A case occurred in southwestern Jamaica in about 1960 in which a girl was repeatedly lifted up by an invisible force and flung against the wall. Physicians (one of whom is practicing now in Toronto) were called in for tranquilization and priests for exorcisms but only when she neared death did spontaneous remission occur (J. K. Long, fieldnotes 1970).

The Toronto physician's brother, a missionary to Haiti, described a quite different case which he had tried to exorcise there. A house was being battered continuously by rocks, but the rocks were falling vertically "out of nowhere." Only when the pubescent girl left, to take residence elsewhere, did this stop. David Leslie's work among the Zulus is described by de Vesme (1931: 140), who says that stones were thrown from an unknown source. In Madagascar, hundreds of people witnessed showers of stones, displacement of objects, and a "direct voice" (de Vesme 1931: 141). In Zanzibar, large pieces of earth were plucked from walls and thrown into the air, followed by a missionary's exorcism (de Vesme 1931: 141-42). Persistent cases like this, and sometimes buffalo skulls falling vertically, are reported by Dr. Gerstaeckner, but have the defect that the reporter was absent at the time (de Vesme 1931: 159-62). A Chippewa man was alarmed by flying chips in a lonely forest only to find that his brother-in-law, one of one's closest friends in that culture, had died at the time (Barnouw 1946: 15). Bogoras (1909: 439) described cases among the Chukchee in which spirits tug at the skin and throw dishes around the room. This probably illustrates the fact that anthropologists themselves, being brought up with myths of ghosts and spirits, tend to animism in amplification of contexts which contain no evidence of spirit control: if dishes must be thrown, they must be by somebody. Perhaps the primitives were ahead of us when, with the concept of animatism, they attributed actions to inanimate objects. More likely, this is simply a PK manifestation of psycho-social disturbance of single individuals. Barnouw (1946: 164-65) has discussed Jung's view that in some cultures phenomena of double consciousness in puberty give rise to psychic manifestations and that the doubling signals character formation for future personality.

Prestige Motivation

Erasmus' (1961: 12 ff.) model suggests operations through which prestige motivates and reinforces behavior, being especially powerful in culture change processes. Much of the psi observed by anthropologists probably represents a distortion of normal and shamanistic activities for the adaptive purpose of soliciting attention and maintaining social status. De Vesme (1931: 100-114) gives numerous well documented cases of this. Besterman (1926) cites instances from Africa. Matthews (1886) confirmed that hysterical girls in the Bahamas would go into trance and mention events occurring up to 30 miles away. Long's (1972, 1973a) confrontation with a famous Jamaican witch doctor (purported to have killed a policeman by hex a few years earlier for trying to close down her church) was surrounded by mysterious events, the importance of which did not become apparent until statistical odds against the events were recognized later during fieldnote analysis. Boshier (1974; personal communication 1975) has cited a number of such occurrences, including some in which, like Castaneda's Don Juan, the medium told Boshier where he had come from and what he wanted before Boshier had said anything. Trilles (1932) was told about his own home and the death of his father by a Pygmy diviner. It did not seem to have occurred to him and others in similar circumstances that this might have represented a hex death committed by the diviner.

Another diviner correctly noted details of Gorer's (1935: 222) and his companion's lives and relatives, including an illness occurring in his family at the precise time. Hallowell (1934; 1942: 47) had the same experience at a Salteaux Indian seance. A Basuto Bantu diviner had dreamed of Keable's (1921: 522-31) arrival before he had arrived there. Eliade (1964/66: 88), Trilles (1932: 144 ff., 180 ff.), and de Martino (1942: 25 ff.) cite related occurrences among the

Pygmies. Metraux (1959: 63) arrived when a Haitian priest had much earlier predicted he would. He and others overlooked the possibility that the priest had forced his visit by PK or telepathic suggestion, but cognitive dissonance may preclude the anthropologist's willingness to admit this possibility. The dissonance factor may be one mechanism for denial by anthropologists, for Long (1972) in Jamaica and Gorer (1938: 185-86) in the Himalayas denied psi until working over their fieldnotes. Because of the anthropologist's denial, the prestige probably does not result as the shaman expects. These cases, when they are reported, are almost always cited as premonitions (precognition), but an equally valid explanation is telepathy, and this explanation is preferred because it does not violate concepts about the "logical" way time should operate. Divination for lost and stolen objects may also fall into this category, but seems to reflect a more direct form of biological adaptation. However, materialization, transformation, and bilocation seem to fit this general category, although oriented more within one's own regular social contact sphere than to those of outside visitors.

Materialization is not sufficiently common to be well documented anthropologically, but it seems imminently possible as a PK phenomenon considering the modus operandi of PK in the quantum mechanical sense (see Part II, Walker) and it has been observed for small objects (see L. Rhine 1970) and for larger ones a few times with Uri Geller (Puharich 1974). Bogoras (in Czaplicka 1914: 233) witnessed the materialization of pebbles by a naked Chuckchee shaman, and when he demanded to see more she repeated the act. Ohnuki-Tierney (1973) notes that an Ainu shaman was reputedly "miraculously materializing the sea and walking on it with a cane."

Examples of rocks seemingly materializing (dropping vertically from the sky) in relation to PK and poltergeist phenomena and countless similar accounts have been given, but not by anthropologists and not with much verification. Hence, we must assume this to be rare among primitives. The purported transformation of one species into another (see, e.g., Castaneda 1968) is relatively uncommon, and the strong mythological or folktale associations of these events make the few reported cases difficult to assess. Lycanthrophy is one of the more common of motifs or events, perhaps because wolves are so human in many ways (see Baring-Gould 1865; Eisler 1951). De Vesme (1931: 118-19) notes that sorcerers in Dakar, Africa, leave their bodies--they give no response: heartbeat, life signs--and take the characteristics of wolves in a different location (bilocation), and that similar feats occur in Uganda, by the report of Dr. R. W. Felkin, in which the form of a jackal is taken. The theme is perhaps recreated in Castaneda's (1968) psychedelic play experience with a dog. De Vesme (1931: 188-90) notes that in Latin America (cf. McGovern in Moss 1974: 158) visions alone often create impressions of being an animal and that Peruvian sorcerers claim actual transformation into animals. Barnouw (1946: 16) spoke to a woman who had gotten a lecture by a snake which then turned into a man. Animal voices are often noted as being associated with psi in primitives (de Vesme 1931: 141). Bogoras (1909: 435-38) describes a voice almost identical to that noted by de Vesme, indicating that he could detect special voice qualities from a recording made of both the shaman and the animal.

The works of Zingy, Singh, and Itard on feral children are not considered here, since this phenomenon, while perhaps mythically related to lycanthrophy, seems completely nonparanormal. Materializations, transformations, and bilocations are complicated by the basic problem of what separate realities comprise. Castaneda (1971) gives the example of Don Juan's appearing simultaneously and in the same location to five different sorcerers' apprentices, including Castaneda, but dressed in five different costumes--i.e., the costume was completely different depending on which of the five was viewing it. Pragmatists will refuse to accept at face value the facile and increasingly popular argument that everyone's reality is his own.

Biological Adaptation and Survival

Psi of four somewhat different forms seem to suggest adaptation as their functions: divination, precognition, weather control, and levitation. Over 50 convincing cases of these have been found in anthropological literature, and if similar sorts of paranormal phenomena were added it would bring the number to nearly 100. These events and thus their adaptive values seem then to be by far the clearest cases for the ecological argument.

Divination. Divination is common among South African sangomas and their talents are even used for thefts from stores (Boshier 1974: 282; 1975). Barnouw (1946: 9) notes that "a Chippewa shaman uses his alleged powers for the benefit of his community by foretelling the approach of the enemy, locating wild game and finding lost objects by clairvoyance, and warding off invisible cannibal monsters who threatened the security of the group." The notation of precise time of death is frequently reported in a great many cultures which have no clear historical connections (Gurney et al. 1886; Gibson 1944). Ernestine Friedl has recounted to Barnouw (1946: 16) one individual who "saw the deceased wife of a man who had been running around with another woman shortly after his wife's death." Friedl notes that "Chippewa custom severely criticizes any person who behaves in this way within a year of the death of a spouse." A woman in Jamaica had a totally disabled husband and finally went to live with a boyfriend. When the husband died, he appeared to haunt her, and was seen walking within the neighborhood by others. This would seem to provide a validation of sorts, but the fact that the shaman Mother Rita and anthropologist (Long 1973a: chapter V) were able to exorcise this ghost by means of various peculiar trinkets, charms, candles, and what both exorcists viewed as psychological suggestion, indicates that visions by others in this case may better be explained as telepathic hypnosis by the mentally disturbed wife than by the wanderings of a soul following death. The time of death notation has often occurred among the Maoris as indicated by cases cited by de Vesme (1931: 156-59), including those of Lang and his opponent Edward Tylor! But death divining, as by the stopping of a clock, often seems to be a purely psychological and spontaneous phenomenon, with little direct relationship to adaptation unless one's last intimate contact with the dying may be viewed as a psychological support. Location of thieves and lost objects is more obviously pertinent. Brockhaus (1968: 41-42) has noted this for the Ivory Coast, Long (fieldnotes 1970) for southeastern Jamaica (divination of one thief out of six potential ones using a ring pendulum), de Vesme (1931: 109-110) for the Zulus, and psychiatrist Laubscher (1938: 43-45) regarding his psychometric experiments with South African *igquiras* (witch-doctors); it is interesting that Humphrey (1944: 224) learned that an *igquira* had been reading Laubscher's mind at the moment the latter was speaking to a well-known anthropologist. counts have emphasized the great strength of cultural expectations towards diviners and the high degree of importance of diviners and divining to society as the result.

Further examples similar to these are found in Musil (1928) for the Rwala Bedoins; de Vesme (1931: 104-5, 109-111) for South Africa including the Transvaal, for the

Mardings of Senegal (pp. 112-14), for the Maoris of New Zealand (pp. 154-55), and Wisconsin Indians (pp. 175-78); Besterman (1926: 2-4); Gorer (1935: 220-21); Lincoln (1935: 329-31) and Rivers (1922: 94-96) for Solomon Islanders; Lincoln (1935: 331) regarding C. G. Seligman in New Guinea; Lee (1968) for Zulus; Mandlebaum (1960: 225, 232) for Kotas of India; the Sussmans (see Part V) for the Sakalava of Madagascar; Besterman (1928-29) and Linton (1927) for Madagascar; Neihardt (1932) for Plains Indians; Ohnuki-Tierney (1973: 24) for the Ainu; Parrinder (1961: 137); and Wallace (1958; 1967: 185-86) and Fenton (1953) for the Iroquois.

Middleton and Winter (1963) indicate that it is obvious from accusations arising from any divination that psi should theoretically be de-emphasized, and suggest that in time of cultural distortion negative aspects of psi present dangers; i. e., in terms of Eisenbud's PK death wish principle, psi might become an inwardly-projecting psychosomatic mechanism for the entire society. Ralph Linton (1955: 530), on the other hand, utilizing very early and perhaps preacculturation materials, notes that the very positive adaptive aspects of divination and other psi phenomena were subjected in most cultures to heavy empirical tests. Long (1972) has noted the same, regarding the use of herbs for curing. Thus to echo Linton and Swanton, it is not necessary to conjure up psycho-religious or rationalizing functions to "explain" the practices of divination. Further, considering that at least a few primitives have the intellectual capacity to be empiricists, take pragmatic actions, and make statistical or frequency interpretations, the ideas of divination's being a randomizing device are fanciful.

Edgerton (1971), in a cross-cultural survey comparing how divination is viewed as a survival method in various evolutionary stages or ecological niches, has discovered some important relationships which should be further explored relative to real versus imagined psi occurrences within the general practices of divination. He finds divining to be much more common among pastoralists than farmers. His observation that "the greater individuation and uncertainty of pastoral life" with its greater numbers of "imponderables of weather, enemy raiders, and wild animals" leads to "recourse to divination ... to reduce uncertainty" probably applies equally well to other forms of psi. For example, rainmaking might also be related to evolutionary or ecological states.

Although precognition has a specific technical meaning, its occurrence among primitives is confused by labeling so many occurrences as "premonitions." Anthropologists may be safer in so labeling it because distinguishing between precognition and other forms of ESP or even verifying that it is ESP is more difficult in fieldwork than in the laboratory. Hence, a number of cases are deleted here or lumped under divination. If premonitions about one's death were included the precognition category would be large. But too many cases exist in which suggestion or hex seem to be the simplest explanation, so cases included here are only those in which suggestion seems inadequate (e.g., being struck by lightning during the dry season). Dr. Ahulu observed a case in which a Ghanaian friend spontaneously and unconsciously predicted his own death and was killed by lightning exactly a week later (Hardy, Harvie, and Koestler 1973: 175-76). Mardings of Senegal have been documented as having precognitive visions, including one in which a medicine man predicted his own death (de Vesme 1931: 111-14). Lang (1894), quoting from Darwin's Cruise, notes how a Fuegian on the Beagle predicted the death of his father who was still on shore; this could be telepathy. Hutton (1921a; 1921b) considered Nagas to be skillful in both telepathy and precognition, especially as these were associated with the death of persons.

Mariner (1953: 394) tells of an ill chief of the Tonga who was told by a shaman that his problem was a woman who had died two years earlier. She wanted the chief to join her. The chief admitted that he had dreamed of a woman, whom he could not identify, for the past several nights. As the priest predicted to Mariner, the chief died in two days. His prediction to Mariner without reporting it to the chief seems to preclude suggestion and so represents a tentative case of precognition.

One often dreams of things that fit real but unidentified audible clues; a complicated dream culminating in a plunge over a waterfall ends by awakening the instant a faucet is turned on. In similar manner, the priest may envision complicated mythical forces which move to create a death which he subconsciously saw very quickly had been in fact occurring two days in the future. Grober-Gluck (1974: 197) has noted that "genuine precognition may be experienced according to traditional patterns in the same way that legendary patterns are influenced by traditional conceptions...." The "interlacing between real and fictive conceptions is the core problem" in determining how much of the shamanistic statement represents extrasensory clues and how much represents a subconscious play of the imagination. For more on precognition see Gorer (1938: 186-86); La Barre (1959/69: 25); Spier, in La Barre (1959: 25); and Hardy, Harvie, and Koestler (1973: 174-75).

Functionally and ecologically, one must further ask why precognition would even occur anyway; does it help us? Most anthropologists would assert that looking at future death in the mind's eye is psychologically dysfunctional, and perhaps it would be. But can we, from our own experience and set of cultural values, be assured that such is frightening to all primitive peoples?

Most other precognitive occurrences are more clearly adaptive. Musil (1948: 395) notes that Arabian Bedouin sorcerers are expected to accurately predict how long it will be until the next rain; diviners, using 23 objects which are cast like dice, can predict "hidden things" past, present, and future (p. 396). A Kafir medicine man in the Transvaal, aside from some impressive GESP performances, made a complicated prediction about a man's friend in England and, by the time the observer returned to England, the events had indeed taken place (de Vesme 1931: 106-109). Other examples exist, the most reliable of which are Metraux's (1959: 63) regarding a famous Haitian priest's premonitions and direct telepathy (reading one's exact thoughts at the moment one was having them) and Freuchen's account of the Eskimos (Weiant 1960: 2).

Weather Control (PK). Rainmaking is common in a number of primitive cultures, especially when survival depends on it. Howitt (1948: 255) shows the importance of rainmakers and rainstoppers in Kurnai, Australia. The former utilize sympathetic magic: they fill the mouth with water and squirt it in the direction appropriate to a particular clan. (There was also a headman who would, on provocation, call up furious winds.) McCallum (1959) devotes an entire article to rainmaking in Tanganyika. Skinner (1974) gives an excellent review and bibliography on rainmaking in Africa, but without making any useful observations from his own experience. Gorer (1953: 223) observed thunderstorms in Africa, conjured by trance and sacrifice, without appearance of clouds or rain. De Vesme (1931: 135-37) cites several cases, especially for Xosas and Kamas. Bedouins of northern Arabia predict or create rain (Musil 1948: 395). The obverse of this, rainstopping, occurs precisely where one would expect: in the rainy Himalayas. When Gorer

(1938: 213-14) was being deluged a shaman stopped it, on demand, for three days. It is true that any person with combined knowledge of meteorology and psychology can fake weather control (see Devereux 1961: 288), and so we should be on guard, but these and other examples defy explanations based on coincidence. In spite of many observations of such phenomena by anti-psi anthropologists, even they cannot find failures in rainmaking to equal the successes. Hence, contrary to what is known about atmospheric causation, one is inclined to accept that rainmaking (and stopping) is successfully practiced and has a very high survival value.

Levitation (PK). Although levitation is one of the most esteemed of magicians' tricks, it is, significantly, seldom reported as a psychical phenomenon outside of India, and it seldom appears in folklore or mythology outside of some of the more superstitious of religions, such as Christianity. One problem with observations about levitation, as Bharati has indicated earlier, is that they are often hindered by mass hallucination, thereby complicating the normal process of anthropological verification. Puharich (1962: 33-34), citing a case observed by Dr. Rudolf von Urban, has illustrated this point. Several hundred people, including von Urban, witnessed a gory and spectacular demonstration of the Indian rope trick. All agreed that the conjurer threw the rope up (where it remained) and then climbed up with his assistant. The parts (limbs, trunk, head) of the assistant's body were thrown down, and the master then climbed down the rope, picked up the pieces, and put them in a basket from which emerged the reassembled assistant. When the motion film of the event was developed it clearly showed the two actors walking to the stage where they threw the rope up (it fell down), and it showed the two standing in place for the duration of the act. Until we can make interpretations as to whether visual experiences are staged by telepathic hypnosis or have a true though nonordinary reality (on film as well as retina), then caution is advised in reports about levitation. It would at some point become contradictory to dismiss everything as mass hallucination, as is frequently done with UFOs, for example, in spite of physical evidence to the contrary, but we should try our best to verify such cases carefully, as von Urban did. Only David Leslie (in de Vesme 1932: 140) appears to have directly observed levitation among primitives. In this case a Zulu sorcerer raised a prone man off the ground. Ohnuki-Tierney (1973) cites some cases of levitating on water which he was told about and, although he seems to regard divination as psychical among the Ainu, he knows that the levitating cases must be fables.

"Magicial running" is somewhat different in two respects. Levitation of the types described as real cases and fables seem to have no adaptive function whereas magical running might well be a defense against a combination of fatigue and anxiety in hazardous mountainous areas, and magical running would doubtlessly be easier to fake. As any good winter mountain climber knows, when snow is deep and only a thin crust of ice holds the runner on the surface, it is possible to "hold" the surface by correct "pacing": one literally enters an altered state of consciousness. If something detracts the runner, he breaks through, although the more experienced the climber, the better his "pacing." "Running Lamas" (adepts of lung-gom) have often been described in Tibet (see, e. g., David-Neel 1953: 407-408). Castaneda (1968) was trained in the art by Don Juan. If levitation is possible, then, in the sense of survival, it would be most likely to occur when the traveler needs it most (in the mountains) and when his own abilities to levitate are least likely to abuse his sense of reality (in situations where his normal skills have already made him "magical" by comparison to others).

General Psychokinesis. Other types of PK are very diverse. The best documented is the shaking tent/hut of northeastern American shamans (Barnouw 1942, 1975: 257-58; Hallowell 1934, 1942; Landes 1968; Stiles, in Weiant 1960). R. Linton (1927) observed some clear cases of PK and suspected that others were genuine, in Madagascar. La Barre (1962: 39) has observed and documented by film events among-snake handling Pentecostals in the USA which seem to exemplify PK (cf. Schwarz 1960; 1964). Prasad (1974: 158) says that Sakti (or Shakti) religion of South Asia seems to provide PK phenomena and also examples of crossing of time and space barriers, but notes that these are difficult to study because of the exceedingly occult nature of Sakti. Taylor (1973) says that PK is stressed among the Yąnoamõ Indian shamans in Brazil, but he was unable to verify actual cases. Tedlock (1973) indicates that PK was, and maybe still is, important to Zuñi Indian religion, but this is based on his knowledge of other types of psi which are verified; he also suspects (pp. 12-14) that rainmaking is occasionally utilized when critical occasions demand. Fire without burning and ordeal probably fall under PK, but because of possible mechanistic explanations (see Part II, Beal), other cases are not cited here.

Psychocultural Adaptation

Animism, the belief in spirits or souls and non-ordinary beings, seems almost universal. The existence of spirits does not seem particularly adaptive, since many spirits are malevolent or at least feared. However, in looking over hundreds of examples in anthropological literature, one gets the impression that the cases which seem most plausible are those involving helpful spirits. Some interesting cross-cultural consistencies are found in reports such that, with any less phenomenal concepts, we would read at least some degree of meaning (besides the folkloristic) into the patterns. For example, spirits of the deceased found in many cultures of all continents are considered to be most often found when the people died by treachery or tyranny (see, e.g., David Leslie's work among the Zulus, reported in the de Vesme 1932: 140; Kimball 1973: 182-92).

Possession, whether by trance or in the psychotic sense, is usually attributed to spirits i.e., in the etic sense, possession means no more than certain psychoses of great or short duration, and the very use of the word possession, even by psychiatrists, implies entrapment by spirits). From the days of Emanuel Swedenborg, around 1750, who wrote on the importance of spirits in mental disease and described his own daily intercourse with spirits, there has been a continuous stream of interest in the nature of spirits in psychosis. Van Dusen (1974) has recently defined two types of spirits which are seen by large numbers of hospitalized mental patients. He reports successful treatment of such patients by playing off the good spirits against the bad, and his work is reminiscent of that of Grof, R. Monroe, and Masters and Houston. This phenomenological approach to psychiatry lends a certain tangibility to the concept of animism in primitive cultures.

In most cases of spirit possession the entity is viewed as being malevolent in every way. In these cases we have some of the best instances of PK and GESP but poor evidence for existence of the causal entities themselves. Junod (1962: 481, 489, 498) has discussed spirits' causing illness, the processes of exorcism, and relationships between possession and the moon. This is about as good coverage as appears on primitives' beliefs about spirit possessors. Murphy's (1961) observations about apparitions seen in the late 1800s and early 1900s and their relationship to psi is relevant to the anthropological study of animism.

Bateson's (1936: 54-73) description of vengeance by sorcery among the New Guinea Iatmul involves spirits. Barnouw's (1946: 16) and others' observations about spirit transformations--snake-to-man--among such groups as the Chippewas is treated above. Bogoras (1909: 302) observed that the Chukchee shaman has spirit helpers who, if he does not carry out all their orders, may attack him with a vengeance. There are no other very explicit psi examples of malevolent spirits among primitives, so one must assume that most who are malevolent involve themselves only in cases of psychotic possession. This suggests that thinking of spirits as evil is in itself dysfunctional and, perhaps, a trait associated with Western culture. This principle is demonstrated in Navahos' reactions to the Ghost Dance of 1870 and 1890. These were revitalization movements (see R. Linton 1943; Wallace 1956) predicated on visions that the white man would die off and ancestors and recently dead relatives of the Indians would return. The 1890 movement spread rapidly throughout Western North America, but was never accepted by the Navaho. All sorts of theories were offered for this but the only explanation found to be convincing is that the Navaho, unlike most others, had an unholy terror of ghosts (Hill 1944) which, like witches (Kluckhohn 1944), probably never existed there anyway. That is, if spirits exist and if they, like the appearance of other psi phenomena, depend on belief or responsiveness of individuals to their existence (see Schmeidler 1945), then the evil ones are unlikely to be seen except by those who are psychotic.

Although it is predicted that the good spirits may more readily be found than the bad, verified cases are possibly even less common for the good than for the bad. Barnouw (1946: 16) has mentioned some of the beneficial aspects of spirits in some cultures (e.g., Chippewa children seek life-time guardian spirits in much the same way as Plains Indians seek visions), but this is only verified through consistency of belief combined with the empiricism hypothesis for primitives. Seabrook (1929) has summarized a relevant physician's report of psi in Haiti. But the intermingling of psi and folklore tends to obscure this subject, especially since anthropologists have the tendency not to publish suggestive cases because they are so highly anecdotal.

Communication and Adaptation: Perspectives on Extrasensory Ecology

Human evolution and adaptation is largely a product of language, and the "real world" is a metaphor for a universe whose domain is fixed by the constraints this language places on the senses (i.e., ordinary reality). All peoples have language and all languages have their special principles of constraint. Hence, in the survival patterns of some people, nonordinary realities are never experienced. The very limited data presented here suggest that linguistic constraints may vary from our own to such a degree that in some primitive cultures our supernatural may be their reality; our realities are surely nonordinary to many of them.

Anthropology is always ethnocentric to a degree in that forcing other cultures' traits into the language of pre-parapsychological science necessarily deletes some events which fall outside the bounds of reality as defined in Western civilization. Hence, if primitive man predicts the future, he is dismissed as a "diviner" and his consistency in accurate predicting is disregarded. Yet, if these predictions are important to the survival of his group, then they are an essential ecological element. Adaptation may be approached from many angles: physical, economic, sociocultural, psychological. Extrasensory ecology, or the examination of adaptation by studying paranormal phenomena, may focus on any of these angles. Rainmaking can allow survival in spite of occasional severe drought. Divination can provide an extra margin of certainty under conditions which consistently make survival precarious. Psychic healing can improve life chances when other procedures fail or are unknown; as contagious disease becomes better controlled by modern medicine and cancer or degenerative disease account for an increasing percentage of deaths in modern populations, then psychic healing will be an increasing concern, even to modern people.

Miracles happen in all religions, but for most people in modern societies the miracles happened in the long ago and so become superstition while still functioning as they did originally: to provide social integration. Special stress creates new demands on the psychical realm to meet personal needs, as expressed by psi performance for prestige motivation. Psi is, in these respects, like language, a potential mode of knowledge, communication, and adaptation, and is therefore a valid phenomenon for study in anthropology and cultural ecology.

* * *

Concluding Comments

This final chapter has brought together diverse reports about the paranormal element in primitive cultures and shows how the data can be organized around cultural ecology, one of the most useful and recent of anthropological approaches. It remains to be seen if paranormal phenomena will ever be discovered to be important enough to warrant consideration as providing the main data in an ecological analysis of a culture. But the discussion is mainly meant to show that careful examination of psi, as it relates to healing, divining for game animals, and the status of the psychics themselves, can provide abundant data which will be important for overall analysis of any culture or social system.

The chapter touches only briefly on the other chapters of this volume which relate directly to adaptation. It scarcely mentions the diversity of linguistic and communication factors, the biological origins of psi, the direct role which psi probably plays in health, or the obvious way in which many cultures have learned to manipulate or utilize psi through dream and ritual (techniques which we can actually duplicate experimentally). But no collection of chapters such as these can even approach the point of providing a comprehensive theory about paranormal events in the cultural context since the very mention of the possibility of paranormal events has been taboo in anthropology for almost its entire development as a science, as indicated by the relative scarcity of materials dealing directly with anthropology and psi.

If this volume serves as a proper introduction to psi--for anthropology students who are preparing for fieldwork, or for established anthropologists on whose work parapsychology impinges, or for those who wish to better understand psi in relation to culture and social life, independently of any specific research endeavors, or, lastly, for those who wish to know themselves better as human beings--then the goals of this book will have been more than adequately achieved.

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GLOSSARY*

A description of the basic experimental methods, of the findings, and of the statistical procedures for evaluating ESP and PK results may be found in *Parapsychology, Frontier Science of the Mind*, rev. ed., by J. B. Rhine and J. G. Pratt (Springfield, Ill.: Charles C. Thomas, 1962).

AGENT The "sender" in tests for telepathy; the person whose mental states are to be apprehended by the percipient. In GESP (q.v.) test, the person who looks at the target object.

CALL The subject's guess (or cognitive response) in trying to identify the target in an ESP test.

CHANCE The complex of undefined causal factors irrelevant to the purpose at hand. *Mean Chance Expectation* (also *Chance Expectation* and *Chance Average*): the most likely score if only chance is involved.

CHI-SQUARE A sum of quantities, each of which is a deviation squared divided by an expected value. Also a sum of the squares of CR's.

CLAIRVOYANCE Extrasensory perception of objects or objective events.

CR (Critical Ratio) A measure to determine whether or not the observed deviation is significantly greater than the expected random fluctuation about the average. The CR is obtained by dividing the observed deviation by the standard deviation. (The probability of a given CR may be obtained by consulting tables of the probability integral, such as Pearson's.)

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DEVIATION The amount an observed number of hits or an average score varies (either above or below) from mean chance expectation of a run or series or other unit of trials.

ESP (Extrasensory Perception) Experience of, or response to, a target object, state, event, or influence without sensory contact.

ESP CARDS Cards, each bearing one of the following five symbols: star, circle, square, cross, and waves (three parallel wavy lines). A standard pack has 25 cards. Closed Pack An ESP pack composed of five each of the five symbols. Open Pack An ESP pack made up of the ESP symbols selected in random order.

EXPECTATION see CHANCE

EXTRACHANCE Not due to chance alone.

GESP (General Extrasensory Perception) ESP which could be either telepathy or clairvoyance or both.

MCE (Mean Chance Expectation) see CHANCE

p (Probability) The fraction of times that in a great number of chance repetitions the observed result will be equalled or exceeded.

P (Probability) The number which the fraction of successes approaches in the limit with a sufficiently large succession of chance trials; e.g., in chance matchings with five targets, $P = 1/5$, or one success in five trials.

PARAPSYCHICAL (Parapsychological) Attributable to psi.

PARAPSYCHOLOGY The branch of science that deals with psi communication, i.e., behavioral or personal exchanges with the environment which are extrasensorimotor--not dependent on the senses and muscles.

PERCIPIENT The person experiencing ESP; also, one who is tested for ESP ability.

PK (Psychokinesis) The extramotor aspect of psi; a direct (i.e., mental but nonmuscular) influence exerted by the subject on an external psysical process, condition, or object.

PLACEMENT TEST A PK technique in which the aim of the subject is to try to influence falling objects to come to rest in a designated area of the throwing surface.

PRECOGNITION Prediction of random future events the occurrence of which cannot be inferred from present knowledge.

PSI A general term to identify a person's extrasensorimotor communication with the environment. Psi includes ESP and PK.

PSI-MISSING Exercise of psi ability in a way that avoids the target the subject is attempting to hit.

PSI PHENOMENA Occurrences which result from the operation of psi. They include the phenomena of both ESP (including precognition) and PK.

PSYCHICAL RESEARCH Older term used for parapsychology.

RUN A group of trials, usually the successive calling of a deck of 25 ESP cards or symbols. In PK tests, 24 single die-throws regardless of the number of dice thrown at the same time.

SCORE The number of hits made in any given unit of trials, usually a run. Total score: Pooled scores of all runs. Average score: Total score divided by number of runs.

SD (Standard Deviation) Usually the theoretical root mean square of the deviations. It is obtained from the formula $\sqrt{NPQ}$ in which N is the number of single trials, P the probability of success per trial, and Q the probability of failure.

SERIES Several runs of experimental sessions that are grouped in accordance with the stated purpose and design of the experiment.

SET A subdivision of the record page serving as a scoring unit for a consecutive group of trials, usually for the same target.

SIGNIFICANCE A numerical result is significant when it equals or surpasses some criterion of degree of chance improbability. The criterion commonly used in parapsychology today is a probability value of .02 (odds of

50 to 1 against chance) or less, or a deviation in either direction such that the CR is 2. 33 or greater. Odds of 20 to 1 (probability of . 05) are regarded as strongly suggestive.

SPONTANEOUS PSI EXPERIENCE Natural, unplanned occurrence of an event or experience that seems to involve parapsychical ability.

SUBJECT The person who is tested in an experiment.

TARGET In ESP tests, the objective or mental events to which the subject is attempting to respond; in PK tests, the objective process or object which the subject tries to influence (such as the face or location of a die.)

TELEPATHY Extrasensory perception of the mental state or activity of another person.

TRIAL In ESP tests a single attempt to identify a target object; in PK tests, a single unit of effect to be measured in the evaluation of results.

VARIANCE, THEORETICAL A measure of the dispersal of a group of scores about their theoretical mean (see "Mean Chance Expectation" under CHANCE).

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~~MAR 2 9 1982~~			
~~DEC 9 1985~~			
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